NOVEMBER • 1960

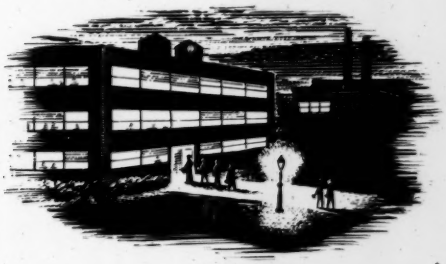
Supervisory Management

WHAT YOU CAN DO ABOUT ABSENTEEISM

Why let preventable absences pull down the productivity of your department?

COST REDUCTION: SCHEDULING FOR SMOOTH PRODUCTION

Good scheduling saves money—and helps you speed deliveries.



The Human Problems of Shift Operation

Science suggests new ways to solve the special problems of the night shift.

AMERICAN MANAGEMENT ASSOCIATION

"This I Believe..."

Vice President in Charge of Revolution

By Murray D. Lincoln

President, Nationwide Insurance Company

ANY ORGANIZATION, once it becomes successful, is apt to lose its original drive and vision. Managers get into ruts. Many people don't want to think. Most people are afraid to tackle something new. Then, too, they get a vested interest in what they are doing and try to defend it to the death. I believe that many people oppose a new idea because they don't feel capable of jumping in and handling it. They would rather oppose it and keep their jobs down pat as they've got them organized than try to tackle something that might throw them out of their routines—and possibly out of their jobs.

Because this is so, I've often suggested that we have a vice president in charge of revolution. His job would be to stir up everything and everybody, to criticize and challenge everything being done—objectives, methods, programs, results. I would want my vice president in charge of revolution to spend time throwing us off balance, shaking us out of our coziness, making us feel a little insecure and uncertain.

—from *Vice President in Charge of Revolution*
(McGraw-Hill Book Co.)

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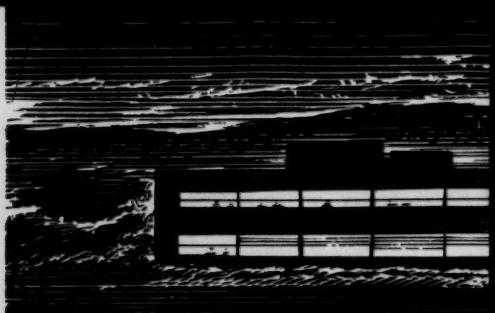

THE HUMAN PROBLEMS OF SHIFT

By Peter C. Reid

More and more companies now operate around the clock. Here are some answers to the special problems of shift supervision.

I HAVE TO BEGIN the day by going to sleep."

"When do I eat? Brother, on the second shift you just *don't* eat."

"How can people work days? Work nights, fish days—that's my idea of the good life."

For 4 million U.S. employees the working day is a night. While the rest of the nation sleeps, shift workers maintain essential public services and keep things rolling in hundreds of plants and offices. And for every group of night workers there is a supervisor who must cope with the human problems of shift operation—his own and those of his subordinates.

Some of them like shift work. More do not. But like it or not, it's here to stay—and we can expect more of it as the tide of automation sweeps in. How to make shift work less difficult and disruptive for the employee is a problem that demands solutions—from the community, from higher management, from the supervisor.

The challenge

How big will the challenge be? In a recent survey of the life-insurance industry, a white-collar domain where daytime work has reigned till now, 21 of the 31 companies studied said they used night shifts. The reason: They need round-the-clock operations to get full value from their electronic data-processing machines.

Banks and other white-collar institutions are also switching to shift operations. Some authorities predict that the high cost of automated

OPERATION

machinery will lead many companies, both white collar and industrial, to extend their operations to 16 or 24 hours a day. In this way a company can spread its fixed costs over more units of production.

Many companies have operated on multiple shifts for years. Some manufacturing processes, like steel and chemicals, can't be interrupted. Transportation, communications, and utilities must be kept going on a 24-hour basis. Other companies move in and out of night work as their production needs fluctuate.

Unsolved problems

Despite the fact that shift work has been around for a long time, we've made only a dent in the problems that go along with its advantages. Much more is involved than juggling the 168 hours in a week to get the most efficient schedule. The great unsolved problems of shift operations are human ones.

Shift work makes unique demands on the employee. It turns him upside down, throws him completely out of whack with the world around him. When most people are working, he's sleeping or at leisure; when he's working, most people are enjoying leisure activities or sleeping. He may feel like a violinist playing "Turkey in the Straw" while the rest of the orchestra is playing Beethoven's *Third Symphony*.

If he's on rotating shifts, he has further problems, because he must constantly readjust his eating and sleeping habits. This means, according to recent discoveries by biological researchers, that with each change of shift he must reset the internal "clocks" that regulate important functions of his body.

Internal clocks

These clocks run on a 24-hour cycle. They time daily cycles in body temperature and the output of adrenal hormones, disease-fighting

white blood cells, and blood sugar (which influences fatigue and alertness). Body temperature, for instance, usually reaches a peak in the afternoon, a low in the early morning hours. But adrenal glands generally pour out the most hormones just before the normal morning waking hour to help people meet the demands of a new day.

How well can we adjust our internal clocks to a new routine? To find out, Dr. Mary C. Lobban of the Medical Research Council Laboratories in London conducted an ingenious experiment on student volunteers. In Spitzbergen, Norway —chosen for the experiment because the continuous summer daylight makes it impossible to tell time by light and dark—Dr. Lobban took away the volunteers' wristwatches and gave them specially adjusted ones. Some of the watches took only 21 hours to tick off 24 hours. Others took 27 hours. With no sunsets or sunrises, the volunteers ate, worked, and slept at *what their watches told them* were normal hours.

Dr. Lobban discovered that although some men and women adapted easily to the unaccustomed routine, others had much more difficulty resetting their internal clocks. On the basis of these findings, she suggested the possibility of testing candidates for night-shift work to pick out those who can most easily adjust to new schedules.

Eating and sleeping habits give the most trouble. A man on weekly rotating shifts may spend the whole week getting adjusted to one schedule of eating and sleeping, and then be abruptly wrenched to a new schedule. A British survey of shift workers showed that individual workers varied in their speed of adjustment: 27 per cent took from one to three days, 12 per cent took four to six days, and 23 per cent took longer. Some could not make the adjustment at all. Interestingly, manual workers adapted more quickly than those whose work was primarily mental.

What about social life?

Equally disturbing to many shift workers is the effect on their family and social life. Shift operation is no respecter of togetherness. A swing-shift worker with children of school age may never see them during the week, since he's sleeping when they leave for school and working when they return. He will see his wife only during the daytime when she is normally busy with her housework.

Social life outside the family is also disrupted. If an employee is on rotation, his recreation time constantly changes and his friends must put up with his erratic appearances. He can't take courses, or participate in social activities that are scheduled at the same time every week. If he's on a permanent swing shift, his recreation time will always come during the day, when his

friends may be working. He's also deprived of many recreational facilities.

Some suggestions

Some wide-ranging solutions have been proposed for these problems. Perhaps the most startling comes from a biologist who has made an intensive study of shift workers' difficulties. His proposal: a 25-hour operating schedule, with three shifts of 8 hours and 20 minutes each. Employees would start work an hour later every day, changing gradually to another shift instead of switching abruptly. Another authority on shift-work problems has suggested that the three daily shifts begin at noon, 8 P.M., and 4 A.M., instead of the usual 8 A.M., 4 P.M., and midnight. The noon shift, he believes, would appeal to young workers who enjoy going out evenings and sleeping late; the 8 P.M. shift to older workers who enjoy daytime activities; the 4 A.M. shift to workers who want to be with their young children in the afternoon.

A business executive has observed that it might be a good idea for large plants to provide the same recreational facilities for shift workers that are available for day workers. A Swedish physician has suggested that better housing would help night workers who have trouble sleeping during the noisy daytime hours. Recently, a civilian in the Office of the Chief of Naval Personnel outlined a plan for a multiplicity of overlapping shifts instead of the normal three, so that the composition of the work group would change slowly during the day. This, he feels, would improve communication between shifts, boost the efficiency of the night shift, and reduce traffic pile-ups, parking-lot problems, and cafeteria jams.

Are any of these ideas workable? Some probably are, and may be adopted eventually. But meanwhile, back at the plant, the shift supervisor has problems that can't wait, not only in managing his subordinates, but in making his own adjustments to shift work.

He can't hope to solve the human problems of shift operations all by himself. They call for long-range, over-all solutions, perhaps some of those mentioned above. But he can make his own contribution by doing everything possible to increase the efficiency of his department and—particularly important—maintain the morale of his employees.

Morale—the main problem

Why is morale a standout problem on night shifts? The answer lies in the attitudes of the shift workers. In their recent book, *Automation and the Worker,* Floyd C. Mann and L. Richard Hoffman report on some intensive research into these attitudes.

Of the 160 workers they questioned, four out of five said

they would not take a shift job if they were starting out to get their first job again.

For many night workers, the only solid motivation is the shift bonus in their pay envelopes every week. But money alone is not enough to boost morale on the job.

The "night people"

Part of the answer is to hire people who are naturally inclined toward night work. Some people warm up rapidly in the morning and do their best work at about 11 A.M. After that, their energy and alertness gradually decline, until by about 9 or 10 at night they can hardly keep their eyes open. Such people would be poor choices for night work. Then there are others whose theme song might be, "I Could Have Danced All Night." They're natural night owls who reach the peak of their energies after the sun sets. They're good bets for shift work.

Some people have other than physiological reasons for liking night work. There are people who prefer daytime leisure—ardent fishermen, boating enthusiasts, amateur gardeners. A worker on the swing shift has the morning and early afternoon free for such interests.

Then there are employees who prefer the working conditions on the night shift. There's a special atmosphere in an office or plant at night —less formality, less supervision, less pressure. These, some people feel, are worth the inconvenience of night work.

Problems of adjustment

On a skeleton operation, it may be possible to staff the entire shift

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NIGHT SHIFTS FOR WOMEN

The huge cost of data-processing systems, plus the fact that computer models often become obsolete before they wear out, make near-capacity operation economically desirable, two-shift operation almost a necessity. The resulting spread of office night work may require revision of labor laws if women office employees are to be as versatile as men. At present, 20 states have laws regulating night work for women. Twelve of these prohibit it in certain industries and occupations, and eight define conditions and set maximum hours.

—GEORGINA M. SMITH, *in Office Automation and White Collar Employment* (Institute of Management and Labor Relations, Rutgers University.)

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with employees who don't mind night work. But many companies require a full complement of workers on the night shift. If there aren't enough volunteers, the rest are often selected on a seniority basis. They may have serious problems of adjustment—and thus become problems to the supervisor.

Too much absence, poor work, frequent accidents, constant fatigue —all these are danger signs that an employee is having trouble adjusting to shift work. His supervisor may be able to help—either by counseling him or sending him to someone who can advise him.

Design for living

One supervisor in an Ohio machinery plant reports that he's helped a number of his subordinates work out a new design for living on the graveyard shift—midnight to 8 A.M. A typical pattern had been for a shift worker to go to bed in the morning as soon as he got home from work. After sleeping—or trying to sleep—during the day, he got up in the afternoon and spent the rest of his free time at recreation or perhaps at another job. Then he went to work. Thus, the routine was sleep, play, work—a complete reverse of the normal cycle. The result was constant fatigue.

Try to get back to the normal cycle, the Ohio supervisor counseled his men, by sleeping from 3 to 11 P.M., working midnight to 8 A.M., and using the hours right after work for recreation. The payoff: Workers felt fresher on the job. Not all of them were willing to adopt the routine, of course. Men with children of school age found that they saw their kids only on weekends. But a number of single employees and some married men found that the new routine lessened their fatigue.

When do you sleep?

Even this sequence of activities involves some sleeping during the day—one of the most difficult problems. Napoleon may have been able to get along on two hours of sleep, but the average employee needs eight. Yet, in a survey of British shift workers, three out of four said they got less than eight. "It's hard to live a night-shift life in a day-shift neighborhood," one worker said.

During the day, the air is filled with the noise of traffic, children's shouts, clattering dishes, radios, and television sets. If the problem is acute, the employee should consider the possibility of moving to a quieter neighborhood. If this isn't feasible, some relief could be provided by ear stoppers of the type used in industrial plants. The company medical department may suggest the best type to use.

Food makes a difference

Nutrition also plays an important role in the night worker's morale and efficiency. Anyone who eats

poorly and irregularly becomes more susceptible than others to illness—and the night worker may have trouble eating properly because his mealtimes come at odd hours. The swing-shift worker, for example, may eat skimpily before he goes to work because he doesn't want to be lethargic on the job. And in some cases, he has neither the time nor the opportunity to get a hot meal at the plant.

The supervisor who suspects that poor nutrition is to blame for an employee's inefficiency, fatigue, or absenteeism should suggest that he ask the plant medical department, or his family doctor, for advice on establishing a proper diet.

Besides the problems of individual workers, the shift supervisor faces some special operating problems. Let's take a look at some of them.

COOPERATION

Achieving cooperation in his group is part of every supervisor's job. The shift supervisor faces an additional challenge: getting cooperation among different shifts in a department. Ideally, the three shift crews should function as a single working team. But it seldom works out that way, for a number of reasons.

For one thing, many night-shift workers feel "special." Because they feel cut off from normal community life, they develop the tight-knit internal loyalties and sensitivity to criticism characteristic of minorities. With this "chip-on-the-shoulder" attitude, they're easily provoked into warfare with the day-side crew.

Then, too, with multiple-shift operations it's difficult to pinpoint responsibility for lost or broken tools, abuse of machines, defective work, poor housekeeping.

"The other crew did it"

"Buck passing is our number-one problem," one supervisor said recently. "If anything is wrong, 'the other crew did it.'"

Sharing tools and machines is another big bone of contention. A man tends to become possessive about his working equipment, especially if it's important and if he's used it for a long time. It's *my* grinder, *my* turret lathe, *my* truck. In one plant making electrical instruments, small tools—used by all shifts—appeared and disappeared mysteriously. A shift supervisor discovered that his men, irate because they felt the tools were being mishandled on the preceding shift, were taking them home at the end of their day.

Another source of friction is housekeeping. In a chemical plant, the operators on each shift were supposed to clean the floor and the equipment. But since there was only one daily inspection, at the end of the night shift, the first two shifts were lax about cleaning up sticky kettles, mixers, and grinders.

Incentive payments can also create trouble. Working on incentives, a machine-tool operator may be tempted to nurse a set-up along to the end of his shift, even if his tools need sharpening. The worker on the next shift will be stuck with the job of taking down the machine and setting it up again.

Get them into the act

What's the answer? First, of course, the supervisor must get rid of any of his own prejudices toward other shift crews. Second, he should cooperate closely with the other shift supervisors. Third, he must work hard to turn his men's antagonism into a spirit of cooperation.

Abstract appeals for cooperation won't do the trick. Laying down the law may not work either—the antagonism will still be there.

The supervisor who wants genuine intershift cooperation should take a look at the specific sources of antagonism between the crews. Instead of trying to tackle all the problems at once, he should start with the one he thinks can be eliminated most easily. Then he should get his men into the act. By putting the problem to them and asking their help in solving it, he'll make them more receptive to the whole idea of cooperation.

Selling the tangible benefits of cooperation helps too. One problem involved two crews, on incentive pay, working on a production line making refrigerators. A bottleneck had developed at the oven where each refrigerator case was baked for half an hour before it went on the line. Each crew started just enough cases through the oven for its own use, forcing the next crew to wait for half an hour before it could begin work.

Instead of ordering the men to change this practice, the head foreman asked the shift supervisors to enlist their cooperation. The supervisors sold their men on the advantages of cooperating—if each crew left 10 refrigerators in the oven for the other crew, there'd be more incentive pay in everybody's envelope.

The men soon discovered that cooperation paid off. That made it easier for the shift supervisors to tackle other cooperation problems, such as housekeeping and care of tools.

Cooperation Counts

Cooperation between shifts may be the key to successful shift operation. Here are some tips:

1. Get rid of your own prejudices toward other shift crews.
2. Cooperate with other shift supervisors.
3. Ask employees to help.
4. Sell the benefits of cooperation.
5. Eliminate one problem at a time.

COMMUNICATION

The job of keeping communication lines open demands high priority in a multiple-shift operation. Poor communication between shift supervisors is a frequent cause of misunderstandings that lead to production snarls. The results can even be tragic. Paul Pigors, of the Massachusetts Institute of Technology, tells of a hospital nurse leaving a shift who told her replacement to give a certain medicine to "the patient near the window." The nurse followed the instructions two hours later—but in the meantime, an orderly had moved the beds around. The wrong patient got the medicine. It was only luck that he survived the error.

An extreme example, perhaps, but it illustrates the importance of precise communication between shift supervisors. A supervisor, pressured at the end of his shift, may dash off a hurried note, such as, "Bill—we need three more tonight." Such hastily scribbled instructions can easily be misinterpreted.

How's your writing ability?

Because the shift supervisor often has to depend on written communications, he should take a hard look at his report-writing ability. If he has difficulty in writing clearly, completely, and concisely, it might pay him to work on improving his writing skill.

Some formal method of written communications is far more effective than the practice of leaving haphazard notes. A standard logbook filled in at the end of each shift will keep each supervisor posted on what has happened during preceding shifts and will transmit any necessary instructions.

Supervisor to supervisor

In one chemical plant, a daybook is maintained on each process under way. Each supervisor records the condition of the batch in process at the time of the shift change. The incoming supervisor reviews the book with the outgoing supervisor, and makes sure that everything is clear. Finally, the two supervisors make an inspection tour to check the accuracy of the information in the daybook.

With this combination of written records and face-to-face communication the departing supervisor can explain what has happened on his shift, and the arriving supervisor can ask about anything he doesn't understand. Many companies have a half-hour overlap of supervision between shifts to provide time for such give-and-take discussion.

Communicating with others

Communicating with other supervisors is only part of the shift supervisor's problem. When is he going to see his own boss? The personnel department? The industrial engineer? What does he do when he needs help in making a decision? How does he keep in touch with im-

portant changes in company policy?

A night-shift supervisor's boss may work only on the day shift, making face-to-face communication impossible without special arrangements. If the shift supervisor is on a rotating schedule, he can meet with his boss when he's on the day shift, but this may be only one week a month or even less frequently.

Once again, written reports must fill the void. In some companies, managers circulate notes on staff meetings. Others issue management bulletins with news of importance to supervisors.

One company is making effective use of that electronic jack of all trades, the tape recorder. After the weekly staff meeting, the manager dictates a half-hour summary on tape, together with other information the supervisor should have. The tape is left for the shift supervisors to play at their convenience. They not only listen, but record their own questions or comments.

This system has done a good job of getting important information to shift supervisors while it matters. Previously, they might have had to wait three or four weeks before being able to exchange information with their boss.

Another company makes use of an even newer type of communicating equipment—the "electronic secretary." This device, connected to

Shift Problems for the Supervisor

Here are some of the special problems a supervisor has to deal with when he works shift hours:

1. *Cooperation*—between shifts, on matters of sharing tools and equipment, housekeeping, etc.
2. *Communication*—between supervisors on different shifts of same operation; between supervisor and his boss, supervisor and staff people who work only day shift.
3. *Safety*—problems of fatigue, lighting, etc.
4. *Job attitudes*—Night workers often need extra encouragement; they should be included in company-wide programs like suggestion systems, safety programs, recreational facilities.
5. *Training*—since, under seniority placement, many night workers are beginners who must learn both the job and a new living routine.
6. *Preparation*—for emergencies when the supervisor may have to make quick decisions by himself.

the telephone of the supervisor's boss, records any messages (up to half an hour long) given to it when the phone is unmanned. Near the end of each shift, the supervisor reports what has happened and any problems that demand his boss's attention. In this way, the manager keeps up to date on events in each shift.

SAFETY

Night workers are more susceptible to fatigue than day workers—and fatigue causes accidents. A particularly dangerous period is before dawn, when fatigue is usually greatest. Besides advising employees on how to avoid fatigue, the shift supervisor must see that safety hazards are at the absolute minimum and that safety rules are scrupulously obeyed.

Improper lighting is a frequent cause of accidents on the night shift, one company has found. It solved its lighting problem by placing individual lights on each machine instead of relying entirely on overhead lighting (which was supplemented by natural light during the day shift).

JOB ATTITUDES

As much as day workers, night workers need recognition, opportunity, a sense of participation, a feeling that their job is important. Often, these needs are even greater.

A shift supervisor may answer that many night workers have a casual attitude toward their jobs—and it's true there is usually higher turnover on the night shift. But the night worker's indifference toward his job may be only a reflection of his supervisor's indifference toward him.

This doesn't mean that a night worker wants close, constant supervision—in fact, many people prefer night work because there's less supervision. It does mean that he wants to know what is expected of him, would like good work acknowledged, and wants to be posted on his performance and his chances for getting ahead. Encouragement is always welcome, and for night-shift workers it's particularly needed during the early morning hours.

Nor should night workers be left out of company-wide programs that often get their biggest play during the day shift. The supervisor should encourage his employees to participate in suggestion systems, safety programs, productivity drives. He should let them know about any company recreational facilities that they can use on their time off.

TRAINING

If shift placement is on a seniority basis, the night-shift supervisor will get more than his share of green workers. This means a heavy training job.

When he's breaking in a new night worker, the supervisor should keep in mind that besides learning a new job, the employee is also learning to adjust to a new living

routine. Therefore, he must avoid giving the new employee too much new material at one time. The training will stick better if it's paced more slowly.

Time of training is important, too. The beginning of the shift, when the employee is most able to concentrate, will usually be most productive.

PREPARATION

A night-shift supervisor can't pass the buck when he's got to make a quick decision. He's often by himself, without higher levels of management to hand him the answer. It's true that he may be given a telephone number to call—but he won't be thanked for too many telephone calls that are not caused by real emergencies. Therefore it's a good idea for him to try to anticipate problems and consult his boss about them beforehand if necessary. By planning ahead, he can keep emergencies down to a minimum.

Plenty to be done

Business and the community have a long way to go before the human problems of shift operation are satisfactorily solved. As more companies go on a round-the-clock schedule, however, there will be greater demand for basic solutions. Research projects, such as the three-year study of how shift work affects health and job satisfaction now being made by the University of Michigan's Survey Research Center, may suggest some positive remedies.

Meanwhile, there is a great deal the shift supervisor can do to improve the efficiency of his department and boost the morale of his subordinates—and himself—as they work toward the dawn. ◆

What's New?

EMPLOYEES WANT TO KNOW what's going on in their company, and the person they prefer to hear it from is their supervisor. So say the results of a survey conducted by Opinion Research Corporation among employees of Caterpillar Tractor Company, Peoria, Illinois, and reported in the company's magazine, *News and Views*.

Over four fifths of Caterpillar employees who were questioned wanted to know more about their company's plans for the future. Other major areas of interest: the prospects for steady work; job transfers and new job openings; company practices and policies affecting employees; and taxes and other government regulations affecting the company and its workers. And out of 13 possible sources of this information, the supervisor was the preferred source for 63 per cent of the employees.

What you can do about ABSENTEEISM

By Charles W. Johnson

Chronic absenteeism hurts everybody—including the absentee.

ABSENTEEISM? That's no problem for me," a supervisor once said. "My men are out occasionally just like anybody else's, but I still get the work out—and we're way beyond our quota."

How did he do it? When the situation was analyzed, it was found that this supervisor carried about 10 per cent more men in his department than he really needed. When men were out, he used his surplus people to fill in for the absentees. That's how he was able to meet his production schedules.

That's one solution to a problem that baffles many supervisors; but it's an expensive solution, and a wasteful one. Obviously, there must be a better way to handle a situation that can be an important factor in operating costs and a cause of decreased production and quality.

Just one absent worker could delay an entire group and upset work flow in a department. Yet in some plants, absenteeism is no real problem, because employees understand that it is not to be tolerated. They have been shown how chronic absenteeism makes their own work more difficult.

Kinds of absences

There are two kinds of absences: *involuntary* (when the worker has no control over his absence—for instance, when he is sick), and *voluntary* (when the worker could be at work if he chose to, but chooses *not* to).

Involuntary absences, for the most part, can't be controlled, but voluntary absences can be.

The goal, then, is to reduce voluntary absenteeism in order to hold

total absences down to the lowest possible level.

How do you achieve this goal?

Survey of factors

Let us first review a survey completed by the University of Michigan at the Detroit Edison Company. This survey indicates several important factors known to have a bearing on absenteeism. They exist in every plant.

1. *Workers whose skills are fully applied do not stay away as often as others.*

Job satisfaction and attendance do not depend solely upon the pay envelope. Four times as many low-absence employees as high-absence employees at Detroit Edison said they had a good chance to use their best skills for the job.

2. *Liking for the kind of work is important.*

Work attendance is related to how much a person likes the work he is doing. When the work he does has intrinsic value or interest for him, he is enthusiastic about his job, receives greater satisfaction from his daily work life, and is much more likely to have a good attendance record.

3. *Low-absence workers find supervisors ready to talk about personal problems.*

In work groups having the lowest averages for absenteeism, more men reported that their supervisor usually or always had enough time to see them when they wanted to talk to him about something personal than in the high-absence groups. They also said that their supervisor kept them informed about how they were doing.

Illustration courtesy of the Institute of Industrial Relations, University of California

4. *Team spirit keeps workers on the job.*

A conviction that fellow employees had plenty of team spirit was about 20 per cent more prevalent among low-absence workers than among those frequently absent. A supervisor who can build up a genuine team feeling will find his men pulling together.

5. *Freedom to talk about job problems with supervisors is related to absence.*

Supervisors who create an atmos-

This article has been adapted from a chapter of *The Supervisor—Key Management*, by Charles W. Johnson. © 1960, by Prentice-Hall, Inc., Englewood Cliffs, N. J.

phere that makes for free and easy discussion of job problems have fewer absences in their work groups than those who do not.

6. *A feeling of group solidarity goes along with low absence rates.*

People like to be a part of groups that they think can attain their goals.

7. *Satisfaction with chances for promotion is geared to attendance.*

Most people say that opportunities for advancement are important. Those who do not see chances to get ahead are less satisfied. They are usually less concerned about whether or not they are on the job every day.

8. *Employee satisfaction with pay is also connected to attendance.*

Satisfaction with wages is determined by both the amount of financial need a person feels and the possibility he sees in his work for satisfying that need.

9. *Recognition of good work influences absence rates.*

Giving recognition for work done well is one of the best ways of prompting employees to do even better work. Employees who feel they are given full—or even some—recognition for their work, and are not just taken for granted, are absent less frequently.

How to achieve the goal

One of the major causes of purely voluntary absenteeism, and many other employee problems, is poor morale.

Here are four tips for keeping morale up and absences down.

1. Make each employee feel important

This should not take any forced effort; after all, every one of your subordinates *is* important.

But does he know why?

One man says he has "just another job. The plant won't close because I'm out." He sees no harm in taking a day off now and then.

The task, then, is to make him recognize that his individual work is important. First, of course, the supervisor himself should know why this particular job is important. If it isn't, then it should be eliminated and the man placed elsewhere.

Then the supervisor should show the man the importance of his work. There would be fewer voluntary absentees in industry today if each worker felt that his job was important, necessary, and responsible.

2. Take a personal interest in each man

The supervisor must know his men, and take a personal interest in each one. He must set a good example by rigidly controlling his own absences. In short, he must be a leader.

An employee is far less likely to knock off from work if his loyalty has been won by his immediate supervisor. The supervisor should develop a relationship with his employees that will make them feel

that they are letting him and their fellow workers down if they are absent.

Furthermore, each man who has a good attendance record should be recognized and encouraged.

3. Keep the workforce properly manned

Overmanning a department—the way the supervisor did who claimed he had no absenteeism problem—is not only costly; it actually increases absenteeism.

"It doesn't make any difference if I'm there today or not. They've got plenty of help around the department," an employee may say.

If the department is overmanned, the supervisor can expect a tough time making that employee believe that it is necessary for him to be at work. When a department is trim and properly manned, each worker knows that his absence will make it tougher on the people who are there, who have to do the work of the absentee as well as their own.

4. Plan for efficient operation

It is also difficult to sell a worker on the necessity of being present if poor planning or lack of materials leave him idle during the work day.

Plans, materials—all work—must flow freely and steadily. In that way, good productivity results—and the worker will know the importance of regular attendance.

If it is necessary to be temporarily overmanned, or if work stoppages are caused by unavoidable shortages, employees should know why, and what is being done to correct the problem.

Following these four rules will help encourage "presenteeism" in your department. But this alone will not curb employees who have already developed the absentee habit.

To control absences effectively, records are needed from which the percentage of absences can be computed.

Computing the percentage

Every supervisor should know the percentage of absences in his department at any time. This makes it possible to outline the plan of attack and permits him to compare present with previous performance.

To compute the percentage of absence, you can use the following formula:

$$A = \frac{W.A.}{W.O.}$$

"Per Cent of Absence" = Workforce absences divided by Working opportunities

Let's say you have 50 men in your department. Your plant operates five days a week. Applying the formula, you would arrive at the following conclusion:

Fifty men who worked five days would mean 250 *"working opportunities"* or that number of chances for absences.

Suppose that during that week there were ten absences. The "work-

ing opportunities" divided into the actual *"workforce absences"* would give 4 per cent for the week.

Percentages for a period of one month, one year, or longer can be computed with the same formula. Substitute the number of days in the period for which the percentage is being computed.

To reduce absenteeism

Once he has percentages and absentee records, and has studied the causes of absenteeism in his department, the supervisor can begin to take steps to reduce it. He should:

a) *Talk to every absentee.*

He should watch attendance records and talk to each man upon his return to work.

"We missed you yesterday, Charlie," the supervisor might say. "Everything all right today?"

If the man was ill, the supervisor should ask how he is—and be sure he is well enough to be back at work. It's as important for an employee who is ill to stay home as it is for one who is well (or has no pressing reason for absence) to be at work.

If the employee did not report for work because of necessary personal business, he should be told that in the future, he should ask to be off ahead of time, so that the supervisor can plan for his absence.

Talking to every absentee tends to put the reins on the unstable employee who is inclined to take a day or so off whenever he chooses. He knows that the supervisor is aware of his absences.

When People Have Been Absent

1. Talk to every absentee, to show you're interested—and aware.
2. Find out why the man missed work.
3. Try to correct the chronic absentee—by stimulating his interest in the work, and giving him a feeling of responsibility.
4. Enforce company rules.

b) *Find out why the man missed work.*

Concentrate on men whose records indicate that they already have the absentee habit or are in the process of acquiring it. Interview these men privately.

Remember that the causes they give for absences may be *excuses,* rather than reasons.

c) *Try to correct the chronic absentee.*

If the records show that a man has been absent too much, the supervisor should help him improve.

Try to increase his interest in his work. Give him a feeling of responsibility. Explain how his absences affect others in the department.

Remember that the company has an investment in each of its employees. That's an important additional reason for correcting the chronic absentee.

d) *Enforce company rules fairly.* The principal objective of any program to reduce absenteeism is to correct, rather than penalize, any employee who takes excessive time off the job. Nevertheless, rules and policies must be followed, and often penalties are necessary to control the small minority of individuals who will not respond to any other kind of persuasion.

Finally, the supervisor should make certain that his men know the company policy on absenteeism. He should enforce the rules fairly and impartially. ♦

The "Hundred-Largest" Club

ECONOMIC GROWTH has been the newest major topic for politicians in this election year, but for industry the idea of growth is an old one. Suppose that each year the 100 largest U.S. manufacturing companies had formed a club; if you examined the club's changing membership over ten years, you would get a clear picture of how our economy has grown.

For example, in 1949, the members of our imaginary "Hundred-Largest" Club had at least $141 billion in assets. By 1959, the minimum was up to $378 million. Over the decade, 15 firms slipped out of the club and have been replaced by others. On the average, the firms that dropped out expanded 52 per cent during the decade—but even this wasn't enough to keep pace with the leaders.

The leading firms gained—and now maintain—their top positions by meeting the changing needs of our nation. Of the 15 companies in today's group that weren't in the club a decade ago, six are in aircraft and missiles. Of the companies that have dropped out, three manufacture railway equipment and seven produce food, beverages, or textiles—items for which demands are growing less rapidly than for other products. Geography has played a part, too: A steel company in fast-growing California has joined, but another steel firm in the East has dropped out.

As the 100 largest firms have expanded, they have created more jobs. About five million employees were on their payrolls last year, compared with slightly over four million for the companies in the 1949 group. At the same time, automation and mechanization have reduced the number of dirty, physically exhausting jobs. Salaries have risen, too: According to payroll statistics for the 100 largest manufacturers, the average annual compensation of workers last year was more than $6,400. A decade ago, the figure was $3,500.

—First National City Bank of New York Monthly Newsletter

Don't BLAME the BOSS

By Lawrence A. Appley
President, American Management Association

If you feel you're being blocked, why not try shifting your sights?

IN DISCUSSIONS on how to improve management effectiveness, one invariably hears comments such as the following: "How can top management be sold on attitudes and practices that are different from what they now follow?" "How can I get my boss to permit me to do these things?" "How can I get authority delegated to me commensurate with my responsibility?"

When top management or "the bosses" have such discussions, their questions are often just the opposite: "How can we get the various levels of management below us to accept, understand, and carry out our basic policies?" "How can we get our supervisors and middle managers to accept responsibility and the obligations that go with it?" "How can we get people to do the things they should do?"

Subordinates are concerned about getting their bosses to do what they think should be done, and the bosses are concerned about getting their subordinates to do what they should do. In other words, each considers the other an obstacle to his own greatest effectiveness.

While there is no question that the other fellow has great influence on our own performance, the opportunity still exists for us to do a lot for ourselves. A good question is, "What can I do that I should do, despite whatever handicaps the other fellow places upon my performance?" This attitude sometimes results in the discovery that both men are after the same objective and are not in conflict at all.

Three climates

A manager may work for a boss whose ideas and practices are in general accord with his own; for a

boss who is in partial disagreement with his ideas; or for a boss who is in complete disagreement with his ideas. The manager must operate in one of these three climates, and he must guide himself accordingly.

If he and his boss are in general agreement in thought and practice, there is no problem and the individual must concern himself only with producing to his greatest capacity.

If they are in partial disagreement, the individual must either adapt himself to his situation or try to influence the boss.

If they are in complete disagreement, and there is no possibility of a change in either's viewpoint, the individual must either accept the boss's decisions or get out.

Look to yourself

In any event, the first thing any manager—from first-line supervisors to top managers—must do is to consider how much he can accomplish by improving his own practices and procedures, without coming into direct conflict with higher management.

Those who feel that they do not have enough responsibility and authority should ask themselves if they are making the best of what they have. Sometimes, that is the best way to attain more.

If a manager cannot work with his people in certain ways because his actions are negated by conflicts with higher-management practice, is he absolutely sure that he is getting all the results he should despite such a handicap?

Before blaming all our failures and frustrations on top management, let's be sure that we have made the most of our own abilities and that we have actually tested our bosses by presenting carefully thought-out plans with good supporting evidence. Bosses, too, should ask themselves if they have done everything possible to get their subordinates to accept certain standards and perform in certain ways.

Shift your sights

Blaming our inability to accomplish certain tasks on the fact that the boss does not believe in them, or that a subordinate won't cooperate, actually diminishes our own effectiveness. If we shift our sights to doing everything we can, regardless of the difficulties, we sometimes discover that the difficulties disappear. Bosses are usually sold by successful performance, and subordinates usually measure up to responsibility and obligations placed squarely upon them.

Rather than looking for the weaknesses in the other fellow as an explanation of our difficulties, it might be wise to change our approach and first examine ourselves and our own performance. ♦

FACTS DO NOT cease to exist because they are ignored.—ALDOUS HUXLEY

Part 9.

Scheduling for Smooth Production

By Ernest Schleusener

Coordination of men, materials, and machines is an effective tool for cost reduction.

ONE OF THE BASIC RESPONSIBILITIES of a supervisor is to schedule work. You may have an over-all schedule to follow, but within these limits, allocating work in the proper sequence and manner can make a big difference in costs. Good scheduling enables the supervisor to spot where he is spending too much time on an operation; where he can make improvements and cut this time down; and, therefore, how he can cut unit costs without cutting quality.

If your operation is a simple one —if, say, your department is small, your employees are all at one level of skill and ability, you work with one type of machinery or tools, and the work is about the same for each job, you won't have much choice in your scheduling. You will probably schedule according to job priority and chronological sequence of orders.

But few departments are that simple. In the first place, even if everything else were equal, it is highly

unlikely that all workers would be at the same level of ability, or that all machines would run at the same speed. Probably every supervisor has had a rush order come in and has assigned it to the fastest worker in the department or put it on the newest, fastest machine. He does this almost automatically. But as he has to deal with more and more variables, he can't do it automatically. He needs a schedule.

If you want to get maximum output with minimum effort, you have to juggle all the variables that you work with: people, skills, machines, materials, time. Coordinating all these may seem complicated, but it's just a question of weighing and comparing measurable factors. And, as a matter of fact, the more variables you have to work with, the greater your opportunities for cutting costs.

Measuring work

The first step, when each job comes into your department, is to figure out how long it will take. Begin by checking your company's standard figures, which may be averages based on past performance, or over-all plant averages. Your job is at least to meet these figures, or, better still, to do the job in less time, and, therefore, to cut production costs.

To measure each job, first estimate how long it would take if it were done by the "optimum method"—the method that would result in the lowest possible unit cost. In other words, plan, for each job, on using the best of all the variables. Make sure you recognize what variables you have to work with. For *equipment,* consider its age, size, speed, availability, condition, location, and capacity; for *manpower,* consider the employees' skill, speed, availability.

To plan a job at optimum method, then, plan to use your fastest, newest machine, with the fastest, most skilled operator, and the materials best adapted to that job.

Obviously, you can't give every job to your newest machine or your best operator. So, for each job, list two alternative methods of doing the job, using your next best and third best machines or manpower. Now estimate the time each job would take, done by Alternates 1 and 2.

Break it down

For accuracy, you must consider three parts of the job:

1. *Make-ready*—the time it takes to prepare the job before it is actually started.
2. *Do*—the time it takes to do the actual work.
3. *Put-away*—the time it takes to clear the decks for the next job.

This breakdown is important, because as you're juggling your schedule, you may find, for instance, that the newest machine may not be the optimum choice for a particular job. It may require so much extra

setup time that the job would take longer than on an older machine that had longer *do* time but less make-ready and put-away.

Figuring dollars and cents

At this point, you can translate your time measurements into dollars and cents. This is done simply by multiplying the number of hours the job should take by the rate per hour of doing the job. This includes the machine-hour rate (a figure that you or the accounting department should have), the employees' rate of pay, the cost of materials, or any other costs of doing the job. (If you don't already have these figures, it's a good idea to keep a file of them on hand for ready reference.)

Let's take a job on which the machines are your only variables. To produce this job would take Machine X a total of 8 hours, Machine Y, 9 hours, and Machine Z, 12 hours. At a machine-hour rate of $6, putting the job on Machine X would cost $48, on Machine Y, $54, and on Z, $72—plus, in each case, the cost of the operator's time. The optimum method would be to use Machine X, and Alternates 1 and 2 would be Y and Z.

When you also have a choice of operators—at different outputs and different pay rates—figure them into your totals. Usually, you schedule a machine and an operator together, adding the machine rate and the operator's pay rate, and then multiplying by the number of hours the job will take. Perhaps you can switch operators to different machines to achieve the best method. This depends, of course, on a number of factors, such as the availability of the machine or the operator.

How do you schedule?

When you have measured the requirements of each job, decide on the period for which you will schedule. Should it be by the day, the week, or the month? Most operations are scheduled by the week or the month. But if a tremendous number of items has to be finished every day, then scheduling on a daily basis may be more practical, even though it requires more attention. If you find that you have to change your schedule too often, try planning it for shorter periods. It's better to finish a schedule for a one-week period with few or no changes than to work on a monthly schedule that constantly requires revision.

Classify the work

Now divide the jobs to be scheduled into three categories: Group A is priority work—either rush jobs or work on which you are behind schedule. Group B is current work, which should be completed within the current schedule period. Group C is the balance of the work—usually jobs that could be delayed without problem, or future work that you could fit in any time.

List all Group-A jobs for one scheduling period, with the meas-

urements you have made: optimum method, Alternates 1 and 2, the time each method will take, and the cost of each. Do the same thing for Groups B and C. You can make your lists on a separate piece of paper for each group, or use a 3″ x 5″ index card for each job, keeping each group together.

The sample lists on pages 26 and 27 are taken from an operation (it might be a stamping operation, or a machine assembly, or any kind of machine operation) most of which could be performed on any one of four machines, each with a machine rate of $4 and an operator rate of $2. (Total cost of operating any machine: $6 an hour.) For purposes of the example, let us say that machinery is the only variable; all other factors are equal.

Job number 127 would take 8 hours on machine 1330 (at $6 an hour, a total of $48), 9 on 1333 ($54), and 12 on 1321 ($72). Therefore, 1330 is the optimum method, 1333, Alternate 1, and 1321, Alternate 2. Since 127 is a week overdue, it belongs in Group A. List the other jobs the same way, until you have a complete list of A, B, and C jobs. Although any number of machines might be available for this job, you still need only three for scheduling—one optimum and two alternates.

Make up the schedule

Now you're ready to coordinate this information in schedule form—in this case, a weekly schedule, based on each machine's running a 40-hour week.

List the machines in the left-hand column. On the same line, start listing your jobs, by number and hours (see page 27). Start with the A group, since these jobs must be done first. For each machine, go right

Other Departments Have Schedules, Too

Your department's schedule must be coordinated with other departments. Check with the departments that receive parts and materials from you to be sure that they are getting them in time and in the right sequence. If you can improve the timing of your work going to other departments, you may help them to cut costs, too.

What about the way you receive work orders, parts, and materials? Would changing the sequence help you get more done in less time? Consider, when you request changes in the way work comes to you from another department, that your request may increase their costs. This can't be justified unless the increase is offset by a greater saving in your department.

JOBS TO BE SCHEDULED

Group A

	Method	Machine	Hours	Cost
Job No. 127	Opt.	1330	8	$ 48
	Alt. 1	1333	9	$ 54
	Alt. 2	1321	12	$ 72
Job No. 128	Opt.	1330	24	$144
	Alt. 1	1333	26	$156
	Alt. 2	1321	27	$162
Job No. 129	Opt.	1330	15	$ 90
	Alt. 1	1333	16	$ 96
	Alt. 2	1322	18	$108
Job No. 140	Opt.	1330	8	$ 48
	Alt. 1	1333	16	$ 96
	Alt. 2	1322	16	$ 96
Job No. 144	Opt.	1330	8	$ 48
	Alt. 1	1321	18	$108
	Alt. 2	1322	18	$108

Group B

	Method	Machine	Hours	Cost
Job No. 130	Opt.	1330	8	$ 48
	Alt. 1	1333	8	$ 48
	Alt. 2	1321	8	$ 48
Job No. 131	Opt.	1333	2	$ 12
	Alt. 1	1321	3	$ 18
	Alt. 2	1322	3	$ 18
Job No. 132	Opt.	1321	8	$ 48
	Alt. 1	1322	9	$ 54
	Alt. 2	—	—	—
Job No. 133	Opt.	1333	18	$108
	Alt. 1	1321	19	$114
	Alt. 2	1322	19	$114

Group C

	Method	Machine	Hours	Cost
Job No. 134	Opt.	1321	20	$120
	Alt. 1	1322	21	$126
	Alt. 2	—	—	—
Job No. 135	Opt.	1330	9	$ 54
	Alt. 1	1321	9	$ 54
	Alt. 2	1322	11	$ 66
Job No. 136	Opt.	1330	7	$ 42
	Alt. 1	1333	7	$ 42
	Alt. 2	1322	8	$ 48

Group C (Cont.)

	Method	Machine	Hours	Cost
Job No. 137 (Unscheduled on first schedule)	Opt.	1330	18	$108
	Alt. 1	1333	18	$108
	Alt. 2	1322	18	$108
Job No. 138 (Unscheduled on first schedule)	Opt.	1330	2	$ 12
	Alt. 1	1322	3	$ 18
	Alt. 2	——	—	——

FIRST SCHEDULE

Machine	Jobs and Hours				Total Hours
1330	127	128	129		
	8	24	8		40
1333	129	140	130	133	
	8	16	8	8	40
1321	144	131	132	133	
	18	3	8	11	40
1322	134	135	136		
	21	11	8		40
				Grand total	160
(14 setups for 12 jobs)				Optimum	135
				Excess hours	25

IMPROVED SCHEDULE

Machine	Jobs and Hours				Total Hours
1330	144	140	128		
	8	8	24		40
1333	127	129	130	136	
	9	16	8	7	40
1321	131	132	134	135	
	3	8	20	9	40
1322	133	137	138		
	19	18	3		19
				Total for 12 jobs	139
(12 setups for 12 jobs)				Optimum	135
Same 12 jobs as above				Excess hours	4

Able to add 2 jobs

through your list of A's in order, on optimum method, until you have used up the jobs or the machine's 40 hours. (You may have to split a job up—do part on one machine and part on another when you have reached 40 hours on the first machine.) Then go on to the next machine, in the same way.

When a machine is no longer available to do the next job on your list by the optimum method, schedule the job on the first alternate method. If that machine is no longer available, go on to your second alternate. When you've exhausted Group A, go on to Group B, and then to Group C, as far as you can go, on your available equipment. If your department has an adequate amount of equipment for the usual flow of work, you should be able to get at least part way through the C list.

Now add up the total number of hours you have scheduled. The total in our sample is 160 (4 machines times 40 hours each machine works). Count the number of setups made, also. In the example, 14 setups were made for 12 jobs, since two jobs—129 and 133—were scheduled for two different machines.

Now add the number of hours each job that is scheduled would have taken if it had been done by the optimum method. You get this by adding up just the hours by optimum method on each job. In this case it adds up to 135. The difference between 135 and 160, the grand total you have scheduled, is known as excess hours—the extra number of hours it takes to do the jobs by alternate methods rather than the optimum method. If you multiply excess hours (25) by the machine and operator cost ($6), you get the amount of money it costs you to do work by alternate methods. (This example is, of course, oversimplified; in most actual situations, your machine and operator costs would vary.)

Cutting excess costs

But possibly you can do better. By rearranging your schedule, you may be able to cut down the excess hours and, therefore, the excess cost.

In rearranging the schedule, you may depart somewhat from your rule of doing most Group-A (rush) work by the optimum method. It may be acceptably fast, and more economical, to do an A job by an alternate method, and a B job by the optimum method. Even though, let's say, the A job does take an extra hour or so, you may be able to save several hours by doing the B job on the most appropriate machine; and you can still get the A job out at approximately the same time.

The first rule in rearranging the schedule is to find out which jobs are taking the most excess hours—in other words, where there is the greatest difference between doing the job by an alternate method and

doing it by the optimum method. This is where you will find your greatest savings. Again, start with your list of A jobs. Job number 144, for example, had been scheduled on Machine 1321, the first alternate method for the job, which would take 18 hours. But by the optimum method, the job would take only 8 —a saving of 10 hours. Schedule the job on Machine 1330. To do this, you have to set Job 127 aside temporarily.

You can save 8 hours by shifting Job 140 from 1333 to 1330, which is the optimum for that job; so make that shift, and plan to move Job 129 entirely to its first alternate, Machine 1333, on which it will still take sixteen hours. This will work out particularly well, because you now have all of 129 on one machine, and you have eliminated one setup. Job 128 can stay on Machine 1330, its optimum method.

Job 127 still needs to be taken care of. Shift it to its first alternate method, Machine 1333, on which it will take only one hour extra. Go through the rest of the jobs on alternate methods in the same way, starting with those with the greatest number of excess hours, until you can't make any more time-saving shifts. Be sure to get your A jobs scheduled first, B next, and C last.

How much did you save?

On your improved schedule, add up your total machine hours *used for jobs that had appeared on the first schedule*. This adds up to less than 40 hours on some machines if you have saved time. And, at this point, you can add Group-C jobs that you had previously left off the schedule.

Now take your optimum-method total for the jobs on the first schedule only (since you want to compare the saving only on those jobs), and subtract this total from 139, the new grand total for the same jobs. The result is just 4 excess hours—

SHOULD YOU DO THE WORK?

You might find in scheduling that you are doing work that could be done more economically in another department. The supervisor of a packing and shipping department, for instance, noticed that one group of parts was coming to him in wire baskets from the previous department. He investigated, and discovered that the previous department could just as easily and cheaply put these parts directly into the shipping cartons. When this was tried, it saved not only packing, but rewashing as well, and the packing and shipping department was able to cut 120 hours of work a week.

21 less than on your first schedule. You've done your work with only 12 setups for the 12 jobs originally scheduled, instead of 14. And you've been able to add 2 jobs totaling 21 hours. Multiplied by the machine-hour rate of $6, you have saved a total of $126 for one week's work, just by good scheduling. And you're 21 hours ahead on next week's work.

Increasing the optimum

Your schedule is almost ready to roll. But there's one more step that you can take to increase the future efficiency of your operation and to cut costs more. That is to investigate the causes for whatever excess hours you still have left—in our example, just four—to see if you can cut them even further. You may find opportunities for long-range improvements.

Your scheduling process will have pointed out some of the weak points in your department. After all, any alternate method is an area for potential improvement. The more optimum methods you use—the faster the machines, the more skilled the workers, the better the conditions—the lower your costs will be.

Thus, your scheduling process is a process of trouble shooting, too. For your immediate work, is there a more efficient method of doing the job? Would a rearrangement of equipment result in fewer hours? Would a simple maintenance job speed up a machine? When you find out how much the present state of affairs is costing, the figures may convince higher management that a change is worth while.

If your weak spot is caused by a manpower problem—for instance, if an operator isn't working efficiently, then further training may be the answer.

Reappraising the schedule

Now you can roll—on schedule. If your schedule has been realistic, the actual time the work takes, and the actual cost, should be close to your estimates. Keep an accounting of the actual time, and compare it to scheduled time. If actual hours exceed scheduled hours, find out where you went off, so that you can schedule more realistically next time.

If you continue to have trouble reconciling actual time and scheduled time, take another look at your original estimates. A common trouble spot is make-ready and put-away time; perhaps these are not accurately measured.

Remember too, that any reduction you can effect in make-ready and put-away gives you an opportunity to increase output by increasing available *do* time. So try to cut make-ready and put-away. Consider longer runs, combined operations, one setup for two jobs, better work sequence, and better methods of preparation and cleanup.

An important tool

Scheduling gets easier with practice. It keeps production running

smoothly, and is a built-in device for spotting areas in which improvements can be made. Above all, scheduling is an important tool for cost reduction. ◆

This is the ninth in a series of articles on cost reduction. Part 10, coming next month, will discuss cutting costs by cutting spoilage and rework.

Principles, Not Rules

A CONSTRUCTIVE APPROACH to discipline is embodied in the following excerpt from "You and Your Job," the employee handbook of *This Week Magazine*:

Our job together is a big, complex, and responsible one. It can't be done by rule of thumb; it has to be performed by the use of intelligence which can't be set up or directed by rule.

So in place of rules we follow principles, which if intelligently applied will solve any situation that rules could, and many that no rules could solve. Among these are:

Integrity—in other words, honesty both literal and intellectual, and the steadfastness to stick to it, come what may. "Character" is integrity through and through—the possession of a set of sound principles; and living up to them—consistently.

Initiative, the capacity and liking for being a self-starter; for thinking ahead beyond what you are told; for seeking responsibility rather than shedding it; for doing more, not only quantitatively, but qualitatively, than orders call for; for bringing imagination to the execution of a task.

Creativeness, a quality closely related to initiative—priceless, in every side of this business.

Thoroughness, with all that it implies in care, accuracy, and attention to detail.

Ability to work with others. This implies both the wish to get along well with other people, and the skill to do so. This skill is born in some people; with others, it is acquired—learned by observing others and following their example.

Loyalty is a much-abused word for one of the finest of all qualities: readiness and steadiness in support of a common cause. Note that it is a *common* cause. Loyalty is a two-way street. The good man is loyal to his organization and the organization to him. The boss—any boss, even of one or two others—wins their loyalty by being loyal to them. The member of any outfit—from a fighting battalion to a successful business concern—is loyal to his outfit because he feels he is part of it and it is part of him.

If you cultivate these qualities and act accordingly, you can't go far wrong.

IF YOU WERE THE ARBITRATOR...

By Morris Stone
Editorial Director
American Arbitration Association

The Free Loaders

A MECHANIC in a machine shop discovered that by drilling a hole in a nickel and attaching a fine wire to the coin, he could get candy out of a vending machine without spending money. It seemed like a great idea, and before long he and two other employees were busy operating the device.

In fact, they got so excited loading up on free candy that they didn't notice that their foreman had come upon the scene.

All three of the men were called into the personnel office and, in the presence of two uniformed policemen, were advised to quit their jobs, thereby avoiding discharge for pilfering. The man who invented the machine-robbing gimmick did quit and was not heard from again. The other two filed grievances.

When the matter came to arbitration, the union's case rested on three defenses: 1) Having policemen present when the discussion took place was a violation of the contract by the employer. 2) The vending machine was not the property of the employer, so he couldn't discipline men for anything they did to it. 3) The two grievants hadn't perpetrated the fraud; they were merely taking advantage of a windfall in that the machine was releasing candy bars without the necessity of depositing coins.

How would you decide this case?

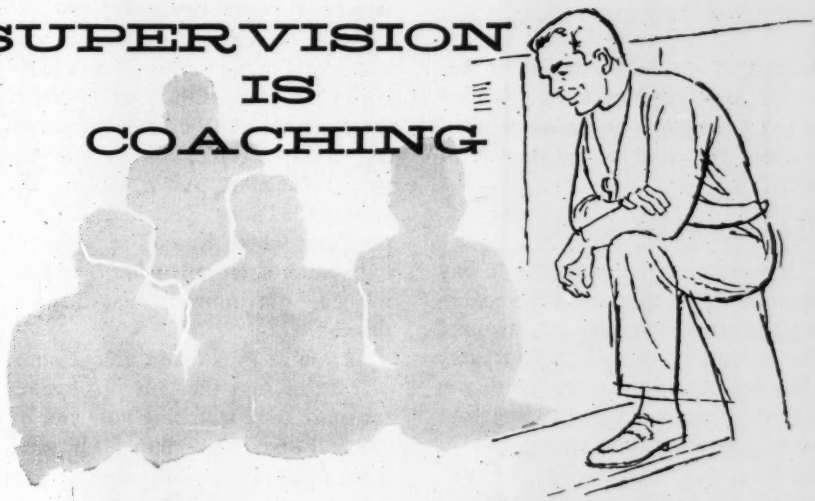
_____ For the union?

_____ For the company?

_____ Compromise? If so, how?

The arbitrator's decision is given on page 38.

SUPERVISION IS COACHING



By William M. Read
Director, Training Division
The Atlantic Refining Company

It takes more than pep talk to produce a winning team.

WHETHER YOU WORK in an office, or a shop, or out in the field; whether you are a foreman, a manager, or a vice-president, if you supervise other people, you are a coach. What's more, you are just as much a coach as the great figures of the world of sports, and your coaching job is a lot more important. They coach athletes in physical skills to win games and medals and to set records.

But you coach men and women in physical and mental skills and attitudes to improve performance on their jobs, and to get greater satisfaction in their work. Your coaching is important to the individual, your company, and the economy as a whole. The results of your efforts can be new and improved products and services, greater productivity, improved profits for your company, and greater stability of business generally. And, incidentally, your coaching will make your own job a lot easier.

You may not consider yourself a coach. But think a minute. You do come into direct contact with the

people you supervise, and what you say or fail to say and what you do or fail to do influences their behavior. If you influence the behavior of other people, you are coaching—whether you think of it that way or not.

"Developers of people"

If you don't give your day-to-day contacts much thought, your coaching probably isn't very positive and the results probably aren't very clear cut. If, on the other hand, you see coaching as a way of doing your own job more effectively and of meeting your responsibility for helping people develop so that they give their best efforts, you can make an important contribution to your company.

It is true that people develop themselves—they learn from their own experiences. The supervisor, however, can encourage, direct, and speed the development of his subordinates by making day-to-day, on-the-job experiences as meaningful to them as possible.

Coaching is a skill that can be learned. Good coaches, supervisors who earn the high praise of being called "developers of people," have learned the skill through conscientious effort and a willingness to be self-critical.

If you are interested in analyzing your skill as a coach, the following guideposts, which reflect the ideas of expert coaches, should be useful to you.

Operate from the sidelines

A coach can't spot weaknesses and errors in his players if he's playing in the game. Observations from the sidelines can be more penetrating, more specific, and, above all, more objective. As a coach, the supervisor must get himself into positions where he can see what is happening—not only *what* is accomplished, but *how* it was accomplished.

If you've ever taken golf lessons, you know that the golf pro spends far more time watching how you hit the ball than hitting the ball himself. The swimming coach seldom gets into the pool. In business, it is harder to observe—but not impossible.

For example, your assistant, Bill Sloane, has recommended some schedule changes that would need coordination with another department. You suggest that Bill present the ideas to the manager of the other department. You go along, not only to back Bill up, but to get a chance to see him under fire.

When you call the manager to make the appointment, you might tell him that, since it's Bill's idea, you're going to let him do most of the talking. Be sure to let Bill know, too.

If questions are thrown to you, turn them over to him, by saying, "Bill knows the details of this thoroughly." Your first-hand observation will provide you with a wealth of insight, which will help you help him improve. But if you let yourself

get involved in the discussion, you won't see or hear much about Bill.

Of course, emergency situations do arise when the supervisor must pitch in. But when he does, he should remember that he isn't coaching; he's playing the game.

Encourage learning by doing

A coach can't win games with a team that never gets beyond skull practice. Supervisors can't depend solely on conferences, training sessions, and conversation. In the development of people, there is no substitute for supervised doing. Note the word *supervised.*

Supervised doing isn't peering over the man's shoulder until he's afraid to raise his arm for fear of hitting you in the head. It's availability—being available to answer questions a man may have when things don't come out the way the book said they would. It's being there without being in the way. It's picking the jobs that will give the man the experience he needs and then letting *him* do them. The coach's job is to provide the right conditions for doing—for failing or for succeeding—and to make the doing meaningful. It is not to do the job *for* the man.

Hold to a known standard

"You can't hit the ball if you can't see it," is a baseball wisecrack. But it has real meaning in the development of people. A man must know what satisfactory performance is and how it will be measured before he can be expected to perform effectively. The supervisor can set and communicate his standards—or better still, he can seek the participation of his subordinates in setting mutually acceptable standards.

Take a Leaf From the Coach's Book

1. The coach operates from the sidelines.
2. The coach encourages learning by doing.
3. The coach holds to a known standard.
4. The coach earns respect.
5. The coach creates a climate of confidence.
6. The coach uses demonstrations wisely.
7. The coach allows for individual differences.
8. The coach lets his people know where they stand.
9. The coach asks questions to encourage thinking.
10. The coach takes time and has patience.
11. The coach works on one thing at a time.
12. The coach *repeats* coaching.

Earning respect

We don't learn much from people we don't respect. A supervisor, therefore, must earn the respect of

his subordinates. He may be respected for his experience, his influence with the boss, his superior knowledge, his broad understanding of the business, or his maturity of judgment. But if he is going to do a real coaching job, he must be respected also for his ability as a coach. And this means expert skill in using all the guideposts we are discussing here.

Create a climate of confidence

The coach's "crying towel" is brought out strictly for the press; with his men the coach works to build confidence in the team and in each individual on the team. By the same token, a supervisor must demonstrate that he believes in his subordinates and in their capacity to improve. This means not that the supervisor must approve of everything a man does, but that he should approve of him as a person and believe in his ability to grow.

Use demonstrations wisely

The coach uses demonstrations to teach inexperienced players and to help veterans correct weaknesses. A supervisor's demonstrations are most effective when they are preceded by a discussion of what is to be observed by the learner, and followed by a review of what he has observed. A supervisor should avoid using demonstrations to bolster his own ego or to try to make his subordinates over in his own image.

Allow for individual differences

When you look at a baseball team, it's pretty obvious that players differ in highly individual ways. You have long-ball hitters and line-drive hitters; you have men who can bunt and men who can't. The coach takes the natural material he finds and tries to improve it, but he doesn't try to change the man from a successful short-ball hitter to a long-ball hitter. He knows that too radical a change could result in no hitter at all.

A supervisor should capitalize on individual differences and help each man with his particular strengths and weaknesses. He should recognize that people differ not only in physical attributes, but also in ability to learn, physical and psychological needs, and many other traits. This means that the supervisor must get to know each man as an individual. More than this, he must tailor his coaching to the individual so that individual differences become a positive force.

Let people know where they stand

A supervisor should discuss performance with his subordinates, not just once or twice a year, but frequently. These discussions allow the supervisor to give prompt recognition to strengths and improvement and to discuss weaknesses constructively. When he does, the people in his department don't wonder

how they are doing; they *know* how they are doing.

Ask questions to encourage thinking

The coach knows that learning is acquired best, and sticks best, as a result of struggling with a problem. Supervisors can use questions to promote this. For example, if Ted Hanley goes to his foreman with what he feels is a great solution to a shop problem, and his foreman says, "Ted, it just won't work and here's why," Ted isn't being coached. If, on the other hand, the foreman asks questions like: "What are the advantages and disadvantages of doing this?" "What alternatives are there?" "What would happen if . . .," Ted has to struggle with the problem to answer the questions.

In the process, his foreman learns how Ted analyzes a problem. Equally important, Ted is led down pathways of thought that might never have occurred to him. He might well come to the same conclusion—that his idea won't work—but he will have learned something. By asking "what," "what if," "how," and "why," a supervisor helps his subordinates think through their problems, analyze their successes and failures, and plan more effectively for the future.

Take time and have patience

Supervisors must understand that real learning takes time. They should know, too, that while learning is taking place, regressions will occur.

By demonstrating patience and determination and by providing encouragement, they can inspire people to persevere until their goals have been reached.

Work on one thing at a time

Supervisors should help a man perfect one aspect of his performance before they go on to the next. If a salesman, for example, has difficulty overcoming customer objections and in planning his work, he will probably improve in neither if the supervisor tries to work on both problems every time he's with the salesman.

It's important for supervisors to realize that if they attempt to work on several phases of performance at the same time, they will only confuse the worker, create unnecessary frustrations, and destroy the man's essential confidence in his ability to improve.

Working on one thing at a time may yield an extra bonus: If the supervisor does something about a key problem in one area, the individual will often improve spontaneously in other areas. This can apply to the supervisor's own work as well. For instance, a supervisor who plans the use of his time poorly and delegates poorly might become a better delegator if he remedied the planning problem first.

Repeat coaching

A football coach will run a player through the same movements many times. He knows he is building habits, and that guided repetition reinforces the desired responses. A supervisor can never be satisfied with a "once and done" coaching job. He must provide frequent opportunities for his employees to do and for him to observe and correct. He must constantly be alert, and repeat his coaching as necessary.

The coaching relationship with your subordinates is continuous. The cycle begins with the setting of goals and moves on to struggling with a problem in the direction of one of the goals, the analysis of the meaning of the experience, further practice and correction, and then back to the setting of new goals. Coaching is a way of supervising. Your job as a coach is not to win just one game, but to develop a team of consistently good players. ♦

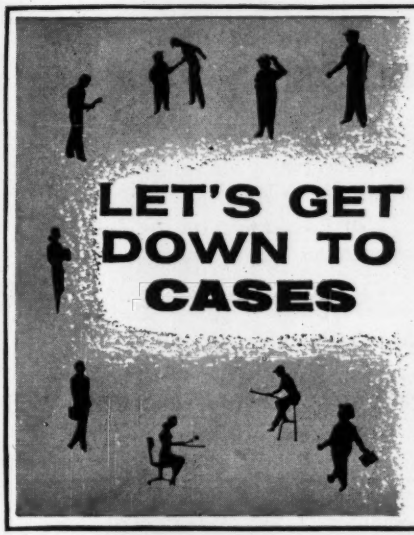
Here's What the Arbitrator Said

(See "The Free Loaders," page 32)

THE ARBITRATOR upheld the company on points two and three, the union on point one. Even if the grievants were merely taking advantage of a "mechanical imperfection" of the machine, he said, their action was "a form of theft" which "unquestionably constituted an unlawful conversion." And it didn't matter that the machine was the property of the vending-machine company, not the employer. It was on the company's property and it was their obligation to protect it.

But it was "abortive of a constructive and fair resolution of the problem which confronted the company," the arbitrator wrote, to coerce men into resigning in the presence of policemen. Because of this, the two men were reinstated. The arbitrator said, however, that he could not, "in good conscience and in view of all the evidence," award reimbursement for any loss of earnings.

NOTE: This award does not indicate how other arbitrators might rule in an apparently similar case. Arbitrators do not follow precedents. Each decision is based on the particular history, contract testimony, and other facts involved.



Every month, SM presents true stories of tough situations supervisors have faced.

How would you solve these problems? Your answers and the steps you take in arriving at them can be of the utmost value to you.

As you consider each case, you might jot down your questions, your reasoning, your decisions.

Or, discuss the cases with a group of people—fellow supervisors, family, friends. You'll find that each person has his own way of looking at the problem.

The Best Man

JED KLINE IS CHIEF of the model shop for the Research & Development Department of Universal Electronics. He has a staff of mechanics and technicians to build prototypes of the equipment designed by the engineers.

Jed's best mechanic is Don Weaver. In fact, Don is by all odds the best all-round mechanic in the plant. Now 32, he started with Universal right after his high-school graduation, and though he's had no further schooling, he seems to have learned everything there is to know about producing electromechanical units. Don has worked in several departments, is on first-name terms with hourly paid workers and top management alike. He was offered a supervisory job years ago but turned it down. "Just let me do my work," he said. "I don't want to be the one who gives the orders."

Jed and Don get along fine. Jed values his top man both for his friendliness and for his contribution to the job. Don's work is always up to the mark, and he has often volunteered ideas for little adjustments that helped bring a project off the drawing board.

There's only one fly in the ointment: Don is often away from the job. People keep telephoning or coming over to "borrow" Don for a spot of trouble here, there, or anywhere in the plant. He's worked in both Maintenance and Assembly, and he knows most of the whims

WIN A BOOK!

Send in your solutions to SM's cases—or send your most interesting case—for publication in SUPERVISORY MANAGEMENT.

The editors of SM will award the author of each case or solution accepted for publication a copy of Leadership on the Job: Guides to Good Supervision, the American Management Association's handbook for supervisors.

Send your contribution to Let's Get Down To Cases, SUPERVISORY MANAGEMENT, *American Management Association, 1515 Broadway, New York 36, N. Y.*

Letters on this month's case should be postmarked no later than November 30.

and quirks of the machinery. There's seldom a week that Don doesn't spend at least a morning or afternoon, or even an entire day, helping out in some other department.

Jed tries to be cooperative, but he's under pressure, too. He's talked to his boss about the problem, but without satisfactory result: Jed's boss hates to say no to anybody, but he's not slow in complaining if a project isn't delivered on time.

Right now the model shop is working on a top-priority prototype that must be used to test the merit of a new device on which the company is making a patent application. Don's know-how and workmanship are needed as never before. But yesterday he was out most of the afternoon "fixing up some trouble in TV assembly," as he explained. (One of Jed's irritations is that people—including Don—frequently seem to feel it unnecessary to clear with Jed before Don goes out on a job. This has gone on since before Jed was supervisor.)

This morning, Jed's boss stuck his head in the door. "How are we coming with the model? Don't forget we have to test it today," he said —but he didn't wait for much of an explanation.

At ten Jed's phone rang. It was one of the big shots—the vice-president in charge of production. "Say, Jed," he asked, "would you mind if we kidnap Don for an hour or so? We have one of our parts suppliers over and we want Don to show him just why Assembly is having so much difficulty with his products." Although the request was put pleasantly, the tone made it clear that a yes answer was expected.

Consider these questions—and ask your own:

1. If you were in Jed's spot, what would you say? _____

2. How do you think Jed should go about getting the over-all situation straightened out? _____

3. Considering Don's usefulness to other departments, what other solutions might there be? _____

4. Are there any rules or procedures in your company that could prevent going over a supervisor's head? If so, do people always follow the rules? _____

5. Looking at the other side of the situation, have you ever gone over a supervisor's or lead man's head to give an assignment to one of his subordinates? _____

"It's our duty—the fact that our votes will cancel each other out has nothing to do with it!"

Readers Discuss SM Cases

Here are readers' discussions of September's case.

A copy of *Leadership on the Job*, AMA's handbook for supervisors, has been awarded to each of this month's contributors.

What Happened to Herb?

(September, page 38)

Case synopsis:

Before his vacation, Herb Schaefer had been a reliable top producer at the Synchro Machine Tool Company, though apparently unambitious for promotion during his three years there.

Shortly after Herb's return from vacation, Inspection reported to Sam Leonard, his supervisor, that many of his gears were only barely within tolerance. Sam spoke to Herb, who looked surprised and promised to be more careful. The next week, Inspection rejected some of Herb's gears. Again, Herb was puzzled and he promised to be careful.

Today, Sam was called on the carpet. A Super-X model had to be completely reassembled because of a defective gear made by Herb. "This is costing the company $500 and, even worse, is delaying delivery to the customer," said Sam's boss.

"I'll see that it never happens again," Sam replied.

Blame Sam

TO THE EDITOR:

Years ago, I was in a situation like Herb's. I was making a hydrolysis test on an experimental compound. My finding, like Herb's result, was not what the supervisor expected. He told me to redo it, and I got the same result. In front of my co-workers, he asked me whether I knew what I was doing, whether my interests were elsewhere, and other embarrassing questions.

I was then transferred to another department. A week later, my old supervisor told me why I was inaccurate. The result from the analytical lab showed there was acid in the experimental compound. Acid was not *supposed* to be in it!

Knowing the good work Herb had been doing—and barring any

physical, emotional, financial, or domestic problems that may have developed—I would first check Herb's micrometer. Someone may have misused it during his vacation.

I wonder whether Herb was given the red-carpet treatment when he was close to the top in production. Has anyone ever told him where he stood—that a little extra go-getting would get him a promotion? Maybe he is like the cook who never got a word of praise from his boarders. One day he pitched a fork of hay onto the table. Everyone yelled, "What's going on here? We're not horses!"

Came the reply, "I didn't know you people would notice the difference!"

—HENRY WOON
Management Analyst, Naval Supply Center, Oakland, California

TO THE EDITOR:

A personal problem that arose during vacation may be keeping Herb's mind off his work.

On the other hand, the problem may involve the relationship between Herb and Sam. Apparently, Sam never told Herb what a fine work record he had. Herb may feel that his efforts are neither recognized nor appreciated.

A large share of the responsibility for the Super-X failure is Sam's, because he had at least two previous warnings that Herb's work was not up to par.

Sam should have arranged a friendly, relaxed interview with Herb after the second instance of poor work. A discussion now will be more difficult, since Herb is probably on the defensive.

—FRANK E. BRIGHAM
Foreman, Economic Machinery Company, Worcester, Mass.

TO THE EDITOR:

To account for Herb's sudden change, Sam should consider these possibilities: failure of the machine or improper technique in using it; a health condition, or a mental or financial problem; dissatisfaction after he met more successful people on vacation; or a problem with fellow employees or supervisor.

Although a supervisor delegates work, he can never duck responsibility for the end result. Sam's handling of the problem up to now has left something to be desired.

—FRANK A. DIEHL
Plant Chief, New York Telephone Company, Buffalo, New York

TO THE EDITOR:

Sam should have checked to see if the stock Herb was working with was inferior. If the stock was not at fault, Sam should have tried to determine if Herb had family troubles. An interview was warranted in view of Herb's past performance.

The second instance of faulty work should have been forcefully presented to Herb, and Inspection should have been alerted to intensify inspection of Herb's work. Sam was

partly to blame that a defective gear reached the assembly line.

—F. M. ADAMS
Manager, Billing Department,
Cutler-Hammer, Inc.,
Milwaukee, Wisconsin

TO THE EDITOR:

By failing to take positive action, Sam not only has cost the company money and has had himself called on the carpet, but has also jeopardized Herb's position.

When a top performer falls below par just after vacation, you could mark it off as a post-vacation letdown. But when the letdown continues, something is wrong.

When Inspection rejected some of Herb's gears, Sam should have talked with Herb about the problem.

Before the talk however, he should think about possible causes for Herb's poor performance: Reorganization of personnel or physical layout, changes in duties, recent promotions, or a change in company policy may have taken place; tolerance settings may have been changed slightly if someone used Herb's machine during his absence; or Herb's machine may have begun to wear out. On the personal side, family problems may have developed. Or, perhaps, Herb met an old friend during vacation who holds a better position. Herb has never been advanced, and the comparison may have lowered his morale.

—R. C. DOUBLE
Staff Assistant, Recordak
Corporation, New York, N. Y.

Blame Inspection

TO THE EDITOR:

Sam must be a supervisor who puts things off. When Herb's work first fell below normal, Sam should have tried to find out why. Instead of just talking to Herb the second week, he should have analyzed Herb's operations from raw material to finished product.

Sam should have had an informal discussion with Herb. He could first have complimented him on the quantity and quality of his work before vacation. Sam should find the source of the trouble—financial, physical, or emotional. A workman like Herb does not deteriorate without cause.

Inspection should be blamed for the failure of the Super-X model.

—JAMES S. MARTIN
Bridgeport, Washington

TO THE EDITOR:

Sam should have investigated the drop in the quality of Herb's work when he first learned that the gears were "barely within tolerance."

Herb's perplexity when he was twice confronted with the decreasing quality of his work indicates that the machine might be out of adjustment. Sam should have examined the equipment immediately.

Eliminating the possibility of machine error, he should have examined inspection procedures for

changes that might have developed during Herb's vacation. The fact that one of Herb's defective gears *was passed* by Inspection calls for careful scrutiny.

If nothing turned up in these checks, he should call Herb in for a discussion of his poor-quality work.

—ROBERT M. SULLIVAN
Personnel Manager, Sullifoam Incorporated, Willow Grove, Pa.

Blame both

TO THE EDITOR:

Herb may have encountered some personal problem he has not been able to overcome. Or his vacation replacement may have damaged Herb's equipment.

In either case, the fact that Sam made no attempt to find out why Herb's work changed suddenly indicates that Sam was not carrying out his responsibilities as a supervisor.

Sam should have immediately checked Herb's equipment to see if it was functioning properly. If so, he should have taken Herb aside and explained that he was concerned about his work. He might have tactfully tried to find out if something had happened during Herb's vacation that was worrying him.

Inspection must get the larger share of the blame for the inferior gear in the Super-X, since it is their responsibility to reject defective parts.

—ROBERT ECKARDT
Foreman,
Brown Shoe Company,
St. Louis, Missouri

TO THE EDITOR:

Causes for the sudden change in Herb's work may involve emotional or physical factors. Here are some possibilities: 1) Herb may have been in an accident during vacation, and may be worrying about insurance adjustments or a possible lawsuit. 2) He may be worried about family or financial problems. 3) His eyesight may be at fault. 4) If fellow employees were laid off during his vacation, Herb may be feeling insecure. 5) If another employee has been promoted to a position he had thought himself in line for, he may feel his work is not being recognized. 6) His machine may be defective. 7) The material he is using now may be different. 8) Inspection may be stricter now.

Herb alone cannot be held responsible for the machine failure. Inspection passed the defective gear, and Sam did little to assure the production of good gears. A better supervisor would have found out why the rejects occurred.

—V. DONUS HOULIHAN
Supervisor, Factory Accounting,
Automatic Electric Company,
Northlake, Illinois

YOUR *Personal* MANAGEMENT

It's time to WINTERIZE YOUR DRIVING!

Five special dangers of winter driving— and how to cope with them.

AS THE SEASONS change, so do our habits. But sometimes there's a time lag—when the days start to turn brisk, you may find yourself still leaving the house without an overcoat. By the time you catch up to the new season, you're likely to have a cold in the head. But if you hang on to summer driving habits when winter arrives, you may wind up with something much more serious—a bad accident.

If you're a driver, the time to shift mental gears is before the first snow falls, before the roads become slicked over with ice, before heavy weather makes visibility poor. You can make a good start on reorienting your driving habits by studying these tips on winter driving, based on extensive technical test data, recently offered by the National Safety Council.

The Council says that there are five primary hazards of winter driving. Let's take a look at the best ways of coping with them.

1. *Inadequate traction to move*

Inability to pull away from a standstill on an icy road, to go up slippery hills, or to negotiate deep

snow can cause trouble. One way to improve traction is to have proper equipment. Good treads on regular tires will help, but snow treads are better. In tough going, reinforced tire chains provide still more traction.

Knowing how to start off in winter weather is another must. Don't try to pull away fast—this spins your wheels on ice and snow and cuts your traction by half. For a sure start, baby the gas pedal. If you're driving a manual-shift car, start in second gear. This cuts down the force applied at the wheels and gets you moving without spinning. At the first sign of wheel slip, ease off on the gas pedal—never bear down.

If you can, keep your front wheels in a straight-ahead position as you pull away. If you do have to turn your wheels, apply gas gently and swing the steering wheel back and forth to iron out a path for the front wheels.

Lowering tire pressure to get more traction may have worked with high-pressure tires, but it is not recommended with modern low-pressure tires. Tests have shown that traction is not improved by reducing pressure below normal.

2. *Reduced ability to stop*

On ice and snow, braking distances are 3 to 12 times longer than they are on dry roads. These long stopping distances are the cause of many winter accidents.

Good tires, snow tires, and chains can give greater control in stopping as well as in starting. But just as important is how well you adapt your driving techniques to winter hazards. Keep far behind the car ahead so you'll have plenty of room to stop. Anticipate braking needs and start slowing down well before you reach a turn, icy intersection, or slippery crest of a hill. Braking before turns, besides slowing you down, will give you an opportunity to get the feel of the road in case you have to stop.

Through exhaustive testing, the Safety Council has discovered that the safest way to slow down or stop on ice or snow is to pump the brakes rapidly. You can maintain steering control this way; holding the brakes locked may cause an uncontrollable skid.

Pump your brakes quickly once or twice a second until you've come to a full stop. This technique gives you both four-wheel braking and effective steering control.

Never use your parking or emergency brake to stop your car on a slippery road—it will lock the rear wheels and put you into a skid. Be cautious, too, about shifting into lower gear to slow your car. Gearing down too low on ice may slide the drive wheels and start a dangerous side skid.

What if you do go into a skid? If it's a rear-wheel skid, steer in the direction of the skid to head the car back on course. Steer just enough to

correct the skid, and straighten the wheels as soon as the car begins to come out of it.

Front-wheel skids sometimes occur when your wheels are locked or you're on a crowned pavement. Releasing or pumping the brakes to let the front wheels roll will usually correct this.

Practice skids are good preventive medicine. But you should practice skids only on a safe site. Find a deserted road, away from traffic and pedestrians.

Get Your Car Set for Winter

Do you usually wait until the first freeze before you have your car winterized? You'll probably get a better job if you take your car to the garage early—and you'll be all set when the thermometer takes its first big dip. Here's a check list of items that should be attended to:

1. **Antifreeze.** Flush cooling system, check for leaks, and put in antifreeze.
2. **Tires.** Install your winter tires before the first snowfall and make sure all tires have good treads.
3. **Chains.** Always carry a pair of reinforced tire chains.
4. **Windshield wipers.** Be sure your wiper blades are in good condition and have enough arm pressure to sweep snow and sleet off instead of sliding over it.
5. **Heater-Defroster.** Make sure the heater-defroster is capable of keeping the windshield clear at all times.
6. **Lights.** Be sure that both headlights work on upper and lower beams; also check stop lights, tail lights, and directional signals.
7. **Brakes.** Have brakes adjusted, and relined if necessary, and be sure brake linings are free of grease.
8. **Winter Tune-up.** An engine tune-up is essential to fast cold-weather starting, and helps avoid stalling.
9. **Muffler.** A rusty, leaking muffler or exhaust pipe can be a carbon-monoxide hazard, particularly if you are stalled in traffic or a blizzard.
10. **Safety Belts.** Install and use safety belts—important in all weather, but especially valuable under hazardous winter driving conditions.

3. *Effect of temperature on starting and stopping*

Temperature plays an important part in determining braking distance and traction on snow and ice. As the temperature rises, ice and snow become much more slippery because of the film of moisture that forms. When you're driving, you may not be aware of a temperature rise, so periodically pump your brakes to get the feel of the road.

4. *Ice and snow in traffic*

The polishing action of tires spinning and sliding on snow and ice makes already hazardous road surfaces even more slippery. This happens particularly at intersections, on curves, and on hills. Always compensate for it in your driving.

5. *Reduced visibility*

Because visibility is often poor in winter weather, it's particularly important that your windshield be clean, inside and out. Make sure your wipers are in A-1 condition. Rubber blades aged by the summer sun may streak your windshield. Even if you install new blades, they can be ineffective if arm pressure is inadequate. If your wiper skips and does a poor job, have the pressure checked—it should be at least one ounce per inch of blade. Check other equipment vital to visibility: lights, heater, and defroster.

During a daytime snowstorm, turn on your headlights so that other drivers can see you. There should be some ventilation in your car to keep your windows from fogging on the inside. After the storm, clear your windshield and windows, and wipe off the headlights, turning signals, and rear lights.

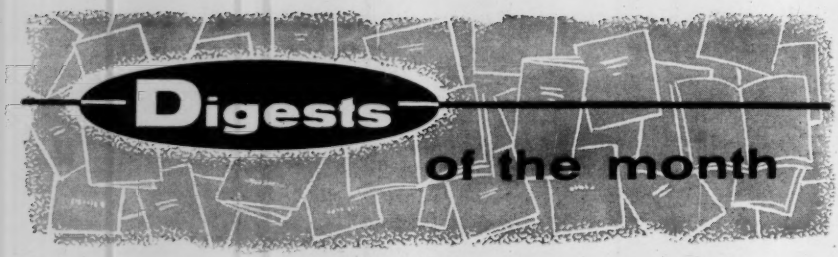
No matter how good your visibility, hidden icy spots may catch you unprepared. Try to anticipate such places—areas shaded by buildings, hills, trees, or underpasses. ♦

Where Does the Money Go?

AVERAGE LIFETIME INCOME potential is climbing, reports a survey by the Institute of Life Insurance, in New York. The young man starting his working career in 1960 has the prospect of earning about $200,000 during the course of his life. In 1949, his potential was only $133,000.

Workers with a grade-school education have an average earning potential of $179,000; high-school graduates, $243,000; college graduates, $343,000.

—*Industrial Relations News*
August 27, 1960



Motivation: What Makes People Work?

WHAT MAKES PEOPLE WORK? What are they after when they put in a full day at the plant or the office?

These questions were asked recently at a conference of supervisors. One of the foremen, Jerry Wilson, insisted that there was just one answer. "Why do they work? Money!"

"Okay," said the conference leader, "I'll pay you exactly double what you're making now if you'll come work for me."

"Double my present pay? Good!" Then Jerry paused. "What'll I have to *do?*"

The meeting broke up in laughter. If Jerry had agreed immediately to the offer, he probably would have proved his point. But as soon as he asked any questions, he was revealing that money was not his only motive for working.

Three basic truths

There are three basic truths about motivation:

1. *Everyone has his needs and desires,* and these are what make him tick —or fail to. If a man is convinced that working will satisfy one of his needs, he works. If he's not convinced but sees some possibility, he works—but not very fast. If he believes that working will not satisfy one or more of his needs, he sits. He may feel like sitting even while the company is paying him to work, because just paying him isn't enough.

2. *Everyone wants job satisfaction.* Because people spend so many waking hours on the job, they satisfy as many needs as possible right there.

3. *Needs and desires are universally similar.* We all have them, but, of course, at different times and to different degrees. Because of this universality, the same kinds of needs and desires that motivate you will give you a clue to what motivates your subordinates.

How do *you* feel?

When you have a plan that will save money for the company, do you want to tell someone about it? You probably do. So do your subordinates, and usually the person they want most to tell is *you.* How do you feel if your plan gets a brush-off? Your subordinates would probably feel the same

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way. Knowing how you feel—what makes you work enthusiastically or what makes you feel like not working at all—can be an important step toward improving your capacity to motivate. Among the questions you can ask yourself are:

- Do you like to be kept informed? Do you feel upset when you're left out of the communication picture?
- How do you feel when your superior praises you?
- Are you interested in knowing there's a future for you in the company, that you have a chance to advance?
- Do you like variety and change of pace in your work?
- Do you care how your job fits into the whole operation, how it coordinates with what other people are doing?
- Is security important to your peace of mind?
- How do you react to challenge? Are you stimulated when you're given a chance to tackle something new?

Getting specific

Once you're aware of the kinds of needs people have, the next step is to adapt your knowledge to the particular situation. When you're motivating your subordinates, there are two factors to consider:

1. *The over-all atmosphere.* Take this discussion between two foremen:

"This layoff has everyone worried. We ought to let the men who aren't going to be affected by it know they're O.K."

"You're right. Especially Ed Loomis. He's right on the edge—just enough seniority to stay. I'll reassure him now."

2. *Your knowledge of the individual.* Often your subordinates' individual ambitions, hopes, pressures, and personalities will determine how you motivate them. For instance, consider Doug Jones, a worker with a lively mind, who seems to be getting bored with his present duties. He might be motivated by this kind of approach:

"Doug, we need some good ideas here. We've got that tough problem in the carding room. How'd you like to see what you can come up with?"

Do you know what's likely to motivate each one of your subordinates? If not, perhaps a few minutes of informal conversation during the day will furnish you with the clue you need.

• *S. G. Williams*
TEXTILE WORLD
August, 1960

THOSE WHO SPEAK most of progress measure it by quantity and not by quality: how many people read and write, or how many people there are or what is the annual value of their trade; whereas true progress would rather lie in reading and writing fewer and better things, and being fewer and better men, and enjoying life more.

—GEORGE SANTAYANA in *Winds of Doctrine*

Automation and the Supervisor

AUTOMATION does *not* mean that industry is going to need fewer supervisors in the future. It does *not* mean that communication between the supervisor and his subordinates will be less important than it is now. And it does *not* mean that supervisors will have less responsibility than they have today.

Just what automation *will* mean to the supervisor was revealed in part by a recent survey of 210 manufacturing executives. The men were divided into two groups: those from highly automated (HA) plants and those from lower-automated (LA) plants. Here are some of the questions they were asked, and their answers.

Increased responsibility

Will automation increase supervisors' responsibilities? The answer was a hearty *yes*. Over 75 per cent of the executives in both kinds of plants felt that automation would require the supervisor to make more quick decisions directly at the work level—decisions formerly made higher up in management. This increased responsibility, one man wrote, will call for a new kind of supervisor: "an alert, machinery-conscious man of high caliber, who can look ahead and grasp the impact of change."

Will it affect a supervisor's need to cooperate with other supervisors on the same level? In one auto plant, the entire assembly line was shut down for half a day because one department couldn't produce its components on time. With automation increasing the integration of machinery and processes, there will be a need for even greater cooperation among supervisors on the same level. This is the opinion of 62 per cent of the HA executives and 53 per cent in the LA group.

Smaller work crews

Will the size of the work crew change? Approximately 80 per cent of the respondents felt that there will be smaller work teams as production becomes more automated. The composition of these work crews may change, too; over 75 per cent of the men predicted that the greater complexity of machinery will boost the need for maintenance technicians and personnel specially trained in mechanics, hydraulics, electronics, and even nuclear energy. Plants may even need stand-by workers, to keep the machines running in case the regular personnel should suddenly become ill.

Does a smaller work crew mean that fewer supervisors will be needed? No, say three quarters of all the executives. Although there will be fewer workers per supervisor, there will be more machinery—millions of dollars' worth per plant—that will have to be kept running without interruption. It will still require good supervision to

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keep the machinery—and the men who run and maintain it—operating at maximum efficiency.

Changes for subordinates

Will supervisors still communicate directly with their subordinates? The answer is yes—and this need for man-to-man communication will probably never disappear. But what will change is what the supervisor says to his subordinates. Once a new machine is installed and running smoothly, there will be less need for many different work assignments and personal instruction, but there'll be more need for a supervisor to inspire a team effort geared to keeping the line moving.*

Will automation give workers more time away from their machines? Increased automation—according to almost all the manufacturing executives—will require the worker's close attention and constant alertness, so workers will be limited in their freedom to walk away from their stations. Besides, most of the executives feel that workers will be more by themselves than they were in the past—perhaps only two or three men operating large batteries of machines. Because their friends won't be in sight, there will probably be less incentive for them to leave their machines.

Will the workers' informal social groups within the shop change? About 44 per cent of the executives in each group believed that the smaller work teams, increasing isolation of work, and restricted freedom of workers to leave their machines will change the kinds of informal social groups and cliques that spring up in the shop. But, man's social nature being what it is, there's a good chance that some new forms of social expression will arise—and may present new challenges to the supervisor.

* For further details about the supervisor's human-relations responsibilities, see *Supervision in an Automated Plant*, SM, August, page 2.

• *Otis Lipstreu*
JOURNAL OF THE ACADEMY OF MANAGEMENT
August, 1960

"So he gave me a good merit rating . . . but where's the raise?"

Science Spotlights Facts about Work

MOST PEOPLE have to work for a living. And most of them would work even if they didn't have to, for doing useful work and being paid for it helps give them a feeling of accomplishment, self-confidence, and self-esteem.

Because work is such an important part of our lives, many psychologists and sociologists have investigated interesting aspects of it. Here are some of their findings.

Effect of job level

Is a man in a high-level job likely to crack up under the strain of great pressures and responsibilities? No. A study conducted by General Motors Research Institute over a ten-year period showed that as men advanced to better jobs and more responsibility, their mental and emotional stability and their ability to withstand strain decidedly increased. The men whose job status didn't improve much during the ten years showed little improvement in personality adjustment. This seems to show that achievement in work contributes to a better-balanced personality. And other research has shown that men who achieve the greatest success in their working lives tend, as a group, to have the fewest nervous breakdowns.

Working conditions

Should you tackle your toughest work problems at certain times of the day? According to studies conducted at Brooklyn College, there is an hourly variation in a person's working capacity. Most people have their most productive hours in the first half of the morning; their least productive hours are likely to be in the late morning and late afternoon.

At what temperature can you do the most work with the least effort? If your work entails strenuous physical effort, you'll do your best when the thermometer reads 60°, say researchers at Johns Hopkins University. If your work involves moderate physical activity, 65° is best. And if you're a desk worker, the ideal temperature will depend upon the time of year: In summer, 75° to 80° is best; in winter, 68° to 73°.

Matter of mind

Does your mental ability decline after middle age? It depends on how mentally active you are. The less you use your "mental muscles," the more likely they'll be to deteriorate with age, and vice versa. Several university studies have shown that people whose jobs made continuous demands on their intelligence tended to increase their mental ability with age.

Do your chances of achievement in your work depend on your I.Q.? Not necessarily. Many successful people don't have above-average I.Q.'s. But most successful men *do* have persistence, plus the capacity to make fullest

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use of their abilities. When people fail, it's usually not because they lack intelligence but because they have neglected, for one reason or another, to make effective use of the intelligence they do have.

What if you're bored with your job? If you're bored with the work you're doing, then—regardless of your capabilities—you won't be able to do it as well as a lesser man who is genuinely interested, according to scientists at the University of California. Boredom dulls the mental processes, slows down the reflexes, and impairs coordination. Furthermore, a person who is bored with his work tends to make many more mistakes than others do, and is generally less efficient. Boredom it was found, also contributes to mental and emotional instability and to nervous tension.

• *John E. Gibson*
TODAY'S HEALTH
September, 1960

Build a Better Mousetrap . . .

WOMEN ARE IRRITATED by many of today's household products. This was demonstrated by wives of members attending the recent Gas Appliance Manufacturers Association convention.

The 125 women, in brainstorming sessions, poured out ideas in answer to the question, "What products not now on the market, or unknown to you, would simplify home management?"

Women said they want a toothpaste dispenser that measures automatically and has no loose cap, "childproof" wall paint, a device to remove static electricity from dryer-dried clothes, disposable oven and broiler liners, picture-thin TV screens for wall hanging, pouring spouts on drug and medicine bottles, and disposable underwear and socks.

Others want no-mildew leather, a dishwasher with shelves that could be transported to the cupboard, a cheap recorder for home telephone-answering service, a car-wash system for home garages, push-button beds that rise and lower for cleaning, and carpet sweepers with magnets to pick up bobby pins.

—ELMER ROESSNER, in *Business Today*

IT IS EXTREMELY UNLIKELY that you have thought clearly if you cannot express yourself clearly, especially in writing. Writing is more than an instrument of communication. It is an instrument of thought.

—EDMUND S. MORGAN
(Professor of History, Yale University)

What's ahead in product design?

TOMORROW'S PRODUCTS are being designed today. To learn some of the ground rules that will govern product design in the years ahead, *Dun's Review* interviewed several of the nation's top designers. One trend they all agreed on is the growing sophistication of the customer. The customer is already wise in the ways of purchasing: In today's replacement economy, consumers are buying certain items for the second, third, or even fourth time. Tomorrow's customer will demand simpler, sturdier products which are easy to work, clean, and repair. As one designer put it, "People are beginning to resent gadgets and gimmicks that aren't worth—in utility or service—all the irritations they arouse."

No mere status symbol

The appeal of a product as a mere status symbol should decline, the designers predict, and they offer two reasons. One is that the smarter customer will buy quality and function instead of "prestige." As a result, there will be less need for annual model changes—a development which should benefit manufacturers, since longer periods between model changes will help spread out high tooling costs.

The second reason is the increasing amount of leisure time, which will boost interest in recreational and cultural products, and in the benefits of travel and education.

The major demand, however, will be for products that add to the pleasures of home life. Among these pleasures is more space: Bulky appliances will lose their appeal and, says one designer, "we will learn to do more with less." And, to help conserve space, there will be more built-in appliances and furniture. This will mean more cooperation between manufacturers of complementary products. Appliance producers, for instance, may be working closely with prefabricated-home builders to make sure their products are suitable for the houses of the future.

Miniaturization and decentralization

The larger family home—and the people who live in it—will benefit from two strengths of American technology: our mastery of miniaturization and our talent for decentraliza-

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tion. A scaled-down washer-dryer, for example, may replace the hamper in the bathroom or the bedroom of the future. And "decentralization" of the refrigerator is already practical as a result of available technology in thermoelectricity.

Miniaturization will be hitting the office, too, along with increased automation. New small business machines will take up a minimum of valuable office space.

Another influence will be the desire of many companies to turn their offices into fine examples of interior design. In the future, office-equipment manufacturers will stress appearance and color as well as efficiency. And, the designers feel, the "built-in" trend of home design will be paralleled in the office.

New materials and designs

New materials already available offer exciting possibilities, the designers say. Materials that need minimum care will replace, more and more, those that require traditional protective coatings. Plastic-coated steel will be widely used for enclosing products, and the inherent beauty of many metals will be brought out by techniques like anodizing, burnishing, and meshing.

Tomorrow's customer will be increasingly tempted to buy products from all over the world, the designers say. Foreign competition has already had its impact on domestic design; one example is the American compact car. If American products are going to be differentiated from imports, the variations will probably be functional ones, rather than variations in style, the designers forecast.

They also see a growing need to make American products more attractive to overseas customers. One way would be our adoption of the metric system, widely used in Europe. The metric system would be particularly important on U. S. machine tools shipped abroad. Internationally understood symbols—instead of words—on controls and dials—would also make our equipment more competitive overseas.

The myth of the "average" man, woman, or family is dying, the designers affirm, and with it the compromise product designed for a type of consumer who never really existed. Today the "big" market is fast becoming a collection of overlapping little markets, many of which represent hundreds of millions—or even billions—of purchasing dollars.

• *Melvin Mandell*
DUN'S REVIEW AND MODERN INDUSTRY
August, 1960

More Power Per Penny

THE AVERAGE FACTORY WORKER can buy 40 per cent more with his earnings today than he could in 1947, a U.S. Labor Department survey notes. The sharp rise in production workers' pay checks in the past 12 years boosted wages by 80 per cent; but because of the higher cost of living, the increase in actual purchasing power is half that figure.

What Is a Good Decision?

SUPPOSE AN OLD MACHINE in your department is wearing out and needs replacement. You have to recommend a new one, and you can choose among several makes and models. How would you reach your decision?

Probably you'd assemble all the facts you could, consult the experts, and dig into your own fund of knowledge and experience. You'd base your decision, of course, on the *quality* and cost of the various machines. And, in a case like this, quality would be enough.

Now, who would get the new machine? The person whose old one was replaced? The person with the most seniority? The most skilled worker? The least skilled? This question reveals another important ingredient of a decision: its *acceptance*. For the effectiveness of a decision depends not only on its quality, but also on how much the men who have to carry out the decision like it, believe in it, and actively support it.

Quality or acceptance

Here's a tougher problem. Suppose there are four ways to lay out a job. The best (most efficient) method is Method A, the second best Method B, the third best Method C, and the poorest way Method D. But you may know that employees prefer these methods in the following order: D, B, C, A. In other words, the best method is the one least liked by the group.

Which method you finally select must depend on a number of factors —but don't forget that acceptance is one of them. A second-best method that has solid employee support will often get the job done better than a best method that gets no support.

All this seems to complicate the process of making a decision, particularly when the best method and the most accepted method are poles apart. How do you get the best combination of quality and acceptance?

Three categories

The solution is to analyze each problem to determine which objective is more important. Once you have settled that, decision making becomes easier. Most of your problems will fall into one of three categories:

1. Problems requiring high-quality, low-acceptance decisions. These are problems in which quality is the most important ingredient, and the need for employee acceptance is relatively low (for instance, buying new equipment). You solve these problems yourself, with facts. Acceptance of a decision, of course, is always necessary—but, in this case, only after you have assured its quality.

2. Problems requiring high-acceptance, low-quality decisions. In these problems, you get involved with your subordinates' attitudes, positions, and values. If the employees don't accept the decision, it can fail. Examples of this kind of problem are: scheduling overtime, vacations, and coffee breaks; the fair way to distribute something desirable, like a new typewriter, a machine, office space, or office furni-

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ture; the fair way to distribute something undesirable, like unpleasant work, late hours, or shifts.

These problems can best be solved by a group decision. Your job is to present the problem, but remain neutral. You should encourage discussion, supply the necessary facts, summarize from time to time, and—if possible—get the group to reach a consensus.

3. Problems requiring high-acceptance, high-quality decisions. These include: setting standards on tardiness and absenteeism; setting goals for production, quality, and service; improving safety and maintenance; and introducing new procedures or labor-saving equipment.

Solving these problems is a delicate matter, since many of them involve employees' prestige, their seniority rights, and, sometimes, their fear that management will take advantage of them if they allow it to. Because of these intangibles, a group decision can be far more valuable than a decision from you alone.

The case of the wet-weather drops

Take this case:

Telephone-company repair foremen couldn't get men to clear wet-weather drops. A wet-weather drop is a defective phone line that runs from a pole to a building. From time to time, water seeps in through a break in the insulation and causes a short. Because this happens only when the line is wet, the problem is temporary.

So wet-weather drops get low priority. Repairmen don't like to bother with them, because they feel that anyone can do it without much thought or skill. They may promise the foreman to pick up one or two on their rounds, but then fail to do so, claiming that they ran into extra trouble on their emergency assignment. The foreman can never be sure when the excuse is justified, and—when he gets enough of them piled up—he often has to assign one man to clear them full time.

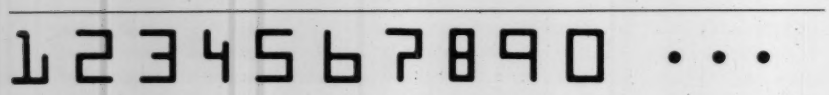
One foreman decided to solve the problem with a group decision. He presented the problem to his repairmen. In the discussion, a few men expressed the fear that, if they were conscientious enough to clear the drops, the foreman would take advantage of them and start giving the undesirable jobs to the men who had cooperated in the past. All the men were willing to do their part, but no one wanted to risk being a sucker. One of the men with high seniority suggested that the work should be evenly divided—and that's what happened.

Whether the new approach involved a better method or whether it was more acceptable to the crew was hard to determine. Both were probably involved—and the wet-weather drops were kept cleared.

• *Norman R. F. Maier*
NATION'S BUSINESS
Vol. 48, no. 3

THE LIFE OF EVERY MAN is a diary in which he means to write one story, and writes another, and his humblest hour is when he compares the volume as it is with what he vowed to make it.

—J. M. BARRIE



Machines That Read

IT CAN READ entire typewritten pages at the rate of 1,800 words a minute. It can translate 7,200 bill stubs an hour into computer language, a job that ordinarily takes 24 key-punch clerks an hour. And it will soon be able to read addresses on more than 10,000 envelopes an hour, and then sort the envelopes into 40 different groups for eventual delivery.

"It" is the newest marvel from the electronics industry: the optical scanner—or electronic eye—that can read printed or typewritten matter many times faster than the human eye. It promises to supply "the missing link" in data processing: taking over the long, repetitive, expensive clerical job of converting words and numbers—via hand-operated punching machines—into computer code language on tapes and cards.

How does it work?

How does the optical scanner work? In one kind of machine—manufactured by the Farrington Manufacturing Company—a beam of light illuminates the words and numbers as they move past the machine's reading station. A reflected image of the characters is projected onto a photoelectric tube, which converts what it "reads" into electrical pulses. A computer, wired to the scanner, analyzes the pulses and then matches them against corresponding pulses for each letter and number, previously programmed into the computer's "memory." As the computer identifies a character, it activates a punching machine inside, or connected to, the scanner.

Optical scanners have come a long way in only a few years. The newer machines can distinguish between capital and small letters, and some manufacturers claim that soon their machines will be able to read handwriting.

Growing applications

No one claims that the scanners will eliminate the conventional key-punch machine; there are too many punched-card and punched-tape machines already in use. But the scanners' applications are growing. For example, American Telephone and Telegraph Company has four scanners which it uses in sending out dividend checks. Every three months, 1,850,000 checks are printed and put through the scanners immediately. The scanner reads the amount and certificate number of each check, and punches this information in code right on the check. After the check is cashed and returned to A.T.&T., it is run through a computer to bring the stockholder's record up to date. An A.T.&T. official says it now takes the four scanners 12 seven-hour days to process the checks; it used to take 83 key-punch opera-

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tors to do the same job in the same time.

National Biscuit Company uses a scanner in New York for processing sales reports from its field offices. Customers' names and the amounts of sales are transcribed by the scanners onto punched cards, which are then fed into computers. In this way, customer records are kept constantly up to date, and management can get daily reports to keep it abreast of sales trends.

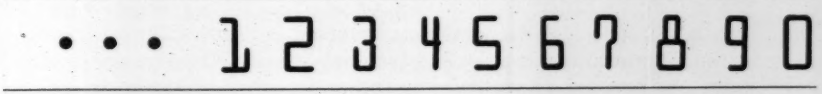
Rapid language translation

One of the most promising uses for optical scanners is rapid language translation. Government and industry must keep up with scientific advances reported in foreign publications, particularly Russian. Human experts haven't been able to translate all this material into English fast enough.

In an effort to solve the problem, International Business Machines supplied the Air Force with an experimental computer that translates Russian. A typist, who needn't know Russian, punches the Russian text in code onto a tape, which is fed into the computer. The computer feeds back the English meaning into a printer. By December, the computer should be fitted with a scanner being developed by Boston's Baird-Atomic, Inc. The scanner will speed the Russian text directly from the printed page into a computer at nearly 6,000 letters a minute—about 60 times as fast as a typist can do it.

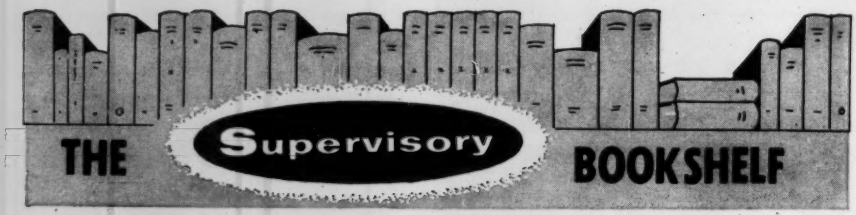
A group at the Rome Air Development Center (at Griffiss Air Force Base in Rome, New York) hopes to use the scanner as a reading aid for the blind. They are working on a machine that will change the output of the print reader into spoken words. To do this, the scanner would put the reading material onto tape. The tape then would be fed into the machine, activating tone keys which theoretically could be turned into spoken words. While this process is still many years from perfection, it represents just one of the great variety of possible applications of the optical scanner.

• *Stanley W. Penn*
THE WALL STREET JOURNAL
August 25, 1960



The numbers accompanying this article illustrate type faces developed by two manufacturers for use with their optical-scanning equipment. Each number has its own unique combination of strokes: short and long lines placed horizontally and vertically within the zone to be read. The scanner reads the strokes and converts this information into electronic signals, which are then transmitted to a computer. The computer has been set up to recognize each number's specific pattern of impulses and to release the appropriate punch mechanism—all within fractions of a second.

Illustrations courtesy of *Management and Business Automation*, September, 1960



BOOK NOTES

(Please order books directly from publishers.)

MANAGERIAL SKILLS FOR SUPERVISORS. By Glenn Gardiner and Associates. Elliott Service Company, Mount Vernon, New York, 1960. 142 pages. $3.95. Managerial skill, as defined by the authors, is a combination of personal competence and the ability to get results from others. Among the 12 skills covered are planning, decision making, communications, and judging people. An adaptation of one chapter, on the exercise of authority, will appear in a coming issue of SUPERVISORY MANAGEMENT.

PERSONNEL: THE HUMAN PROBLEMS OF MANAGEMENT. By George Strauss and Leonard R. Sayles. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1960. 750 pages. $10.60. Written from the manager's rather than the personnel specialist's point of view, this book considers the problems involved in both administration of an organization and face-to-face supervision. Two major sections are devoted to supervision and supervisory skills; other sections will also be helpful to first-line managers.

COMMUNICATION: PATTERNS AND INCIDENTS. By William V. Haney. Richard D. Irwin, Inc., Homewood, Illinois, 1960. 321 pages. $7.20. Mr. Haney deals with the thought processes involved in communication, especially with communication breakdowns caused by illogical assumptions. Chiefly through reports of actual incidents, each chapter defines one such misconception, discusses its probable causes and consequences, and suggests ways to correct it.

EMPLOYEE DISCIPLINE. By Lawrence Stessin. The Bureau of National Affairs, Inc., 1231 24th Street, N.W., Washington, D. C., 1960. 315 pages. $7.85. Fully 30 per cent of all grievances that go to arbitration are based on management's disciplinary decisions, says the author. He examines discipline procedures and the "common law" that he feels has developed from the settlement of thousands of grievances and arbitrations. Among the problem areas covered are insubordination, absenteeism, fights, dishonesty and disloyalty, gambling, and incompetence.

ONE HUNDRED REASONS WHY MANAGERS SHOULD STUDY MOTIVATION. By Russell H. Ewing. National Institute of Leadership, Beverly Hills, California, 14 pages. $1. The "one hundred reasons" also give some interesting ideas on the application of what is known about human motivation. A bibliography is included.

WORK IMPROVEMENT. By Guy C. Close, Jr. John Wiley & Sons, Inc., New York, 1960. 388 pages. $7.75. Before any method of work improvement is introduced, the desires, fears, and needs of the people engaged in the activity must be considered, the author emphasizes. He outlines a systematic method of solving cost problems, with practical illustrations.

MODERN APPROACHES TO PRODUCTION PLANNING AND CONTROL. Edited by Robert A. Pritzker and Robert A. Gring. American Management Association, Inc., New York, 1960. 445 pages. $9.00. For managers responsible for production planning, the editors have presented material on three phases: organization and administration; planning tools and techniques; and new mechanical-mathematical aids to planning, such as operations research. In a fourth section, production planners of three firms analyze their existing systems.

LABOR IN THE UNITED STATES. By Sanford Cohen. Charles E. Merrill Books, Inc., Columbus, Ohio, 1960. 676 pages. $6.95. This text offers an analysis of labor law, Social Security, collective bargaining, inflation and deflation, as they affect labor problems. Background material is given from the fields of sociology, political science, and history.

WORK RULES FOR PROFIT. By Ola C. Cool. Labor Relations Institute, P.O. Box 306, Millington, New Jersey, 1960. 122 pages. $5.00. Designed to help managers reduce waste of manpower, this book proposes effective work rules for making the best use of available manpower and materials. Among the subjects discussed are featherbedding, group controls, communications, and job descriptions.

HANDBOOK OF BUSINESS MATHEMATICS. By William R. Minrath. Van Nostrand Company, Inc., Princeton, New Jersey, 1959. 672 pages. $9.85. This text includes fundamentals of business mathematics as well as the practical methods needed in various types of business calculations. The facts, formulas, tables, and graphs cover operations common to many businesses, including figuring of interest, discount, amortization, depreciation; evaluation of stocks and bonds; analysis of financial statements; appraisal of real estate; use of business machines; and technical tools of control, such as operations research.

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ROSE M. BARILE, Notary Public. (My commission expires March 30, 1962.)

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